

The Canadian Medical Association Journal



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The Canadian Medical Association Journal

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"THE POLICY OF THE OSTRICH"

BY COLONEL J. G. ADAMI, M.D., F.R.S., C.A.M.C.

ON New Year's Day I was sitting after lunch over coffee and cigarettes with an old friend, in London for the war, who before he joined up, enlivened his work as lawyer and financial adviser with an occasional incursion into literature. The afternoon he told me was his: the government department which had been so fortunate to secure his services was being demobilized. Asking him what he proposed to do next—"I am thinking," he said, "of retiring to some quiet spot and putting together a collection of essays upon the 'Dead Hand'." Returning to the old country after all these years, more and more each day there is being borne in upon me the extent to which the Dead Hand of tradition and customary point of view presses upon society and represses logical and needed advance in every direction." And forthwith he launched upon a succession of modern instances.

I could not wholly follow him when he touched upon sexual relationships: with him I had to admit that physiologically the human male is intended to be polygamous, whereas the social code demands that he be monogamous. But his deduction that therefore the social code was wrong, and that we should acknowledge and admit polygamy, failed, as I pointed out to him, to take into consideration the fact that the family constitutes the unit of society, our whole social and moral code being erected upon that foundation. Polygamy, I continued, has in the past been tried and found wanting, and to-day the Mahommedan nations, which give a legal sanction to polygamy, are nevertheless in general reverting to

Being the opening paper of a discussion upon the 'Prevention and Arrest of Venereal Disease in the Army,' held at the Royal Institute of Public Health, on January 8th, 1919.

monogamy: the social environment of man to-day appears to demand that he be the husband of one wife. The real difficulty lay, not in society, but in the fact that man has not yet become physiologically adapted to his social state: the good of the family indicates one course of conduct, man's constitution impels to another. It is an evidence of progress that, as a community, we place the benefit of the family before the desires and comfort of the individual; but doing this we find ourselves in the dilemma that the performance of physiological function, save under the ægis of monogamic marriage, becomes regarded as anti-social, and an act which the individual in his heart of hearts knows to be in itself natural and desirable has to be regarded and taught as contrary to good morals. We find ourselves indeed torn asunder between Peter and Paul, the Peter that is within us teaching us that what God has given us is clean and to be enjoyed, the Paul that woman is a snare, and that even a bishop should have but one wife—and scarcely that. And as youth is largely irresponsible and the sense of social duty is a plant of slow growth, which in some is throughout life choked by the weeds of personal predilection, it has followed that the whole matter of sexual conduct has for generations been surrounded with an atmosphere of insincerity, not to say, hypocrisy.

We give lip service to public duty; the majority of us strive to uphold the social law, but I imagine that even the best of us, be it in thought, word or deed, cannot as men wholly throughout our lives escape from the dominance of our natural passions—that is, if we are real men, healthy and virile. It is the instinct of this insincerity, which in the past has permeated the whole treatment of the matter, that makes it so difficult for most of us to take up the public discussion. In its incapacity to reconcile the physiological and the moral aspects of the subject, the British public and its leaders have sought the solution of silence, of proceeding as though the problem did not exist; they have written themselves down—ostriches. Here it is that the Dead Hand comes in; the Dead Hand of a training begun in early childhood whereby we have been taught to regard the open discussion of sexual matters as "taboo"; the Dead Hand of schoolboy "form" according to which public acknowledgment of one's standing in relationship to moral matters, save on the part of those who have donned the cloth and become professional moralists, brands one as either a prig or a humbug. Happily we are passing out of this phase. The Royal Commission in the first place, and the forcible and courageous pronouncement regarding syphilis on the part of the *Times* in its

leading article of January 4th, heralds the ending of the old regime of silence, concealment and taboo. What this policy, this submission to the Dead Hand of custom has cost the army and the country during the last four years is awful to contemplate. For our salvation as a nation and an empire we have needed the services of every available man; have needed them at the height of their physical capacity. Time and again during the last four years, owing to our want of man power, it has seemed that the greater concentration of the enemy forces must result in a break through our lines, and bring ruin to us. Even without such a break, our losses in man power have been huge, and to-day it is the A1 men who have survived whom we most need still as A1 men, to be the fathers of sound and fertile families if the country is to maintain its ascendancy in industry and influence; those men we, as a nation, need sound, and not infected.

But what has actually happened? Year by year before the war, the annual report of the Director-General warned the government as to the prevalence of venereal disease in the army; a quarter of all admissions to hospital was due to this; no other condition in peace time competed with the venereal diseases in lowering the efficiency of our soldiers, and it was a commonplace of military knowledge that in war time the prevalence and the loss of efficiency from this cause had in the past undergone a rapid increase. Lord Kitchener, it is true, in a notable communication addressed to the soldiers of the little old army, asked them to respect the woman-kind of our Allies overseas, but not a step was taken to protect our men at home. With camps being created all over the country, no steps were taken to render the regulations against harlotry more rigid. Our men have throughout the war been in venereal hospitals, not by companies, but by battalions. Each case has meant two months or so on the sick list, and weeks and months before the individual has been restored to full vigour at the front, if indeed there has not been a legacy of rheumatism, eye disease or enfeebled general health.

The policy of the ostrich was maintained. Before the war the government had appointed a Royal Commission upon venereal disease, and having done this, appeared to think that it had more than done its duty. Do not misunderstand me; the National Council for Combating Venereal Diseases accomplished a notable work in strengthening the hands of the Royal Commission. The Commission itself performed a service of the first order, and the government did well in acting immediately upon its report; but

the report and the act did not contemplate war conditions and the soldier. This I know, that when in the autumn of 1914 the First Canadian Contingent arrived upon Salisbury Plain, it very rapidly found that the Common Law of England and the Military Law were equally impotent to cope with the condition of affairs revealed. Here again do not misunderstand me. I do not mean to suggest that whatever the good women at home may have thought regarding the virtue of their sons and the vice of the British harlot, the Canadian soldier was neither better nor worse than the British or the Australian, or the New Zealand soldier. Let me be perfectly frank. We have as a matter of fact discovered that of the cases of venereal disease among Canadian soldiers admitted to hospital in England at a time when periodically new drafts were being received from across the Atlantic, as high a proportion as twenty-five per cent. of all admissions were of active infections acquired in Canada—were admissions from the new drafts. But what I mean is that the heads of the Canadian service here in England were responsible to the Canadian people for preserving the health of their men. They were responsible to the mothers of Canada. To their surprise they found that harlotry in England is a protected profession, but not a controlled. Here again do not misunderstand me. To a large extent the same is true of Canada; there also the policy of the ostrich has prevailed, and the police have tacitly sanctioned the traffic. But things are altering. Only recently the Commission upon Conservation has published a report upon venereal disease in Toronto, and the Committee of Sixteen another upon vice in Montreal, and these have profoundly stirred the people. But in England in war time, I confess that the Canadian authorities expected immediate and willing help from the local and London authorities in protecting the soldier, and help there was none. Each week end there poured into Salisbury from London from eighty to one hundred loose women. The railway company was impotent to prevent their journeying; the police at Salisbury could not turn them out of the town; the Wiltshire magistrates could or would do nothing; at most, the military police could declare houses of ill-fame within the camp area out of bounds, and turn women out of the camps proper. It took the better part of two years before the government utilized the powers granted by the Defence of the Realm Act, and in 1916 for one special military area where there had been a large outbreak of venereal disease, empowered the competent naval or military authority to transport out of the area those directly or indirectly concerned in

the profession of prostitution. In the meantime all that that most admirable association, the National Council for Combating Venereal Disease could suggest as an antidote was talk: the provision of lectures and the instruction of the soldier—this along with the provision of opportunities for recreation. I believe that I am correct in saying that it took them the better part of three years before they openly recommended their lecturers to advise early preventive treatment after the act, so heavily did the Dead Hand of Mrs. Grundy press upon them.

I shall never forget my attendance along with my chief at a meeting of that society in 1916. Perhaps some of you have heard the story of how, in the early part of last century, grave accounts reached Edinburgh regarding the drunkenness of the further Highlands, and of how the General Assembly determined that it was their duty to send north a missionary to preach temperance, and the missionary went and in due time returned and appeared before the Assembly. Said he, "I have had gran' success." Said the Moderator, "What mean you by gran' success?" "Weel," replied the missionary, "ye must know that I found the seetuation simply awfu', but I wrestled with the puir misguidit folk and as a result of ma meenistrations they have sworn to ameliorate their habits, and no' to tak' mair than one dram of whisky before breakfast the morn."

The worthy chairman at this meeting, now no longer with us, told in all seriousness the anxiety and trouble that one of the great Canadian camps of 40,000 soldiers and more in the south of England had given the council; how they had wrestled with the difficulty; how they had wanted to put the Defence of the Realm Act into force, but feared that action against their frailer sisters would rouse the suffragettes into militancy; how for months they had appealed to the mayor and town council of the nearby town to take action, but without success, until now, when he had the glad news to impart that finally they had prevailed upon the borough magnates and a new era was opening; the mayor and council had consented to appoint two women policemen! Two women policemen to protect the morals of an army of 40,000 men by influencing for good the harpies that preyed upon them!

Nor shall I forget the just impatience of my chief on that occasion, and how he fluttered the serenity of that meeting; how he put it to the council that here in the greatest of world wars, dealing with the greatest of army plagues, for the last two years they had been nibbling at the fringe of the subject, talking and talking but

accomplishing nothing fundamental. How London is the great centre of prostitution, the hot-bed of venereal infection for both officers and men of other ranks on leave. But the council proceeded as though London conditions did not exist; how at that moment, but a few yards away from the meeting, enter one of the music halls and they would find the promenade packed with prostitutes, openly soliciting. Whether his words had the effect I cannot say, but within a week the public-spirited manager of the Empire announced that his promenade henceforth would be closed to women, and the other music halls followed suit.

Now I am convinced that this policy of frank dealing and open speaking is the only one that will improve conditions. Thus had the medical profession and the national council, and the government spoken out at the beginning of the war, the well-being and happiness of the country and the condition of our troops would to-day have been very different from what it is. Even at this late date I would beg the national council to influence the government to publish a statement regarding the venereal situation in the army in successive years of the war, in the different regions—at home, in France, Mesopotamia, and the like, so that the country may know the extent of the trouble as it affects the army, and, simultaneously, to obtain powers to make an investigation in selected areas or classes of the population into the frequency of either syphilis or venereal diseases in general in those areas or classes. Let the situation be known and faced. I am convinced that the upholders of the policy of bated breath, the ostrich policy, once they begin to think over the matter, recognize the unreasonableness of their attitude, and that their opposition is not to be feared, even by the politician anxious for votes. Of this I am convinced from experience. For notice—Mrs. Grundy and the prudes are far more in evidence in the United States than in this country. We, for example, have never condescended to speak of "roosters" or thought it improper to mention the lower extremities by their Anglo-Saxon name, or to drape the anterior continuations of the piano. But this notwithstanding, the Surgeon-General at Washington did not hesitate in 1912, before the war began, to publish in his routine orders outspoken regulations directing all soldiers returning to camp to state whether they had exposed themselves to the possibility of venereal infection, and detailing the preventive treatment to be given to those who had been exposed. I may say that I studied the American treatment at Washington in the spring of 1915 and reported upon it to the War Office, but the Dead

Hand prevented its adoption for close upon two years. Yet if this could be accomplished in the States in times of peace, we in this country need not have feared to adopt it in time of war.

When in 1917 the States actually came into the war, the whole country took up the matter. The Secretary of the Navy, for example, did not hesitate to announce "To-day as never before American manhood must be clean and fit. America stands in need of every ounce of her strength. We must cut out the cancer of disease if we would live." The Secretary of the Army was equally direct. General Pershing, as Commander-in-Chief, has made it one of his army regulations that the venereal status of a unit shall be filed with the other papers of the officer commanding each unit, and shall be taken into account in determining the promotion of the officer. To quote Major Haggard, president of the Southern Surgical Association, "The inevitable pestilence is being fought with every imaginable agency—education, recreation, diversion, protection, isolation, prophylaxis, penalties and court-martial. Many thousands of young men will for the first time be taught the whole truth by all sorts of real men. . . . After the war, the idea will permeate all strata of society, and be a real understandable and liveable benefaction. It will disseminate through America the practice of personal hygiene by uncounted numbers of young men. The beneficial results to accrue to us and to posterity will almost make the war worth while." But Colonel Hugh Young of the United States Army is with us, the well-known head of the genito-urinary department at John Hopkins Hospital, America's foremost authority on venereal disease, and with him Lieutenant-Colonel W. F. Snow, who is largely responsible for the administration of anti-venereal measures overseas. They will put before us what has been accomplished and how. Thanks to Colonel Waley, liaison officer at the War Office, and with the permission of the Commander-in-Chief of the United States forces, they have come from France to attend this conference.

With their important communication in view, I will be brief regarding the methods in vogue in the overseas military forces of Canada. I have already indicated the difficulties in our way due to want of active co-operation on the part of the civil authorities in Great Britain. In practice we have found that *there is no one procedure which is effective in arresting venereal disease in the army; it is necessary to employ a combination.* General Foster, the Director-General, has put into force all the methods save one (court-martial) mentioned by Major Haggard—education, warning, recreation,

diversion, protection, isolation, prophylaxis and penalties. Let me indicate the main points of our activities. One of our leading Canadian hygienists, Colonel Amyot, professor of hygiene in the University of Toronto, has been attached by the Director-General to his office and given special charge of the venereal situation, with a keen worker under him, Captain Gibbs, C.A.M.C., whose whole time is devoted to investigation and propaganda work.

1. *Inspection.* Emergency inspections are held once every week. By emergency is meant that they are held without previous notice.

2. *Education.* On joining up, on arrival in England, and periodically throughout his service, the soldier is instructed regarding personal hygiene, the need to the nation of personal efficiency, the value of continence, the dangers to himself, to his future family, to those around him, of venereal infection; the mode of infection; the nature of gonorrhoea, syphilis and chancroid, and their results. That the instruction may be given in proper form, and nothing essential be overlooked, a syllabus of five lectures on the prevention of communicable disease has been issued from the office of the D.G.M.S. to every medical officer of units in England, the course to be delivered to officers, non-commissioned officers and men in definite groups each week until the course is finished. The men are instructed straightly that intercourse with the other sex is not essential to health, that for a man to expose himself to the danger of venereal infection and become infected is knowingly to acquire a self-inflicted wound which, as much as any other self-inflicted wound, should render him liable to court-martial. If despite these warnings, the temptation to intercourse is too great, then for the good of the service, it is his duty to protect himself so far as this is possible. He is instructed how this may be done, nay more, is told that in their own interests and his, the army authorities provide him gratis with calomel ointment for prophylactic use, and lastly, he is instructed to report for treatment as soon as possible after the act.

3. *Early treatment.* Every Canadian orderly medical room in England is an early treatment centre open night and day; there is present a trained non-commissioned officer to supervise and see that the soldier carries out fully the instructions given. Those instructions, in clear language and clear type, are set forth on the walls. When one of the trained non-commissioned officers seeks, or is given, transfer to other duties, his successor is appointed a week in advance, so that before taking over the duties he may be

thoroughly informed. For those on leave in London, there are open day and night two early treatment centres, at Southampton Street and at Victoria. For these exposed another treatment is given on their return to their units. Men are further instructed that if not in the neighbourhood of a Canadian centre, they are to go to an Australian or New Zealand centre. As a matter of fact, the Dominions are working together and are appointing centres in the large cities of the United Kingdom open to men from all the Dominions. In Paris also is a Canadian centre open to soldiers from all parts of the Empire on leave in that city.

Here it deserves note that, contrary to the optimistic, and I hold dangerous, statement contained in the leading article of Saturday's *Times*, the Canadian authorities in their talks to the men on parade make a point of emphasising that *neither prophylactic nor early treatment assures absolute immunity to venereal infection*. The men are warned that this is not the case, the experience has shown that even under expert supervision neither the one nor the other procedure is free from occasional failure. In this connection the Canadian authorities are at one with Mr. E. B. Turner in his letter to the *British Medical Journal*, January 4th. They firmly believe that if the army—and the populace in general—be advised that absolute deterrents exist when this is not the case, there is a possible danger of their employment leading not to diminution, but positive increase in the spread of venereal diseases. This, I understand, has actually happened in Germany. We have, it is true, no official statistics to bring forward in the matter, because for the good of the service and to encourage the men to apply for treatment at the orderly room, no names are taken.

Penalties. By an Order-in-Council issued in 1916 the Governor-General directed that half the pay of soldiers found suffering from acute venereal disease should be docked, so long as they remained on the sick list, and this is strictly observed, during convalescence the men are given fatigue duties. And to this the venereal record is inserted on the medical history sheet, and accompanies the man throughout his army career, and is brought before the Pension Commissioners.

4. *Treatment.* This is not a medical lecture, so I shall not enter into the details of the treatment given at our two Canadian special venereal hospitals, full of interest as they are for the expert. I would only point out that at both of these hospitals from the first possible moment the men, instead of being treated as being in Coventry and as depraved characters, are treated as human beings.

I have it from one of our chaplains that as a body he found them the best and brightest and most attractive lot of fellows he had come across in the army, and that he treated them as such. As part of their treatment they are kept diverted, football, baseball, and other teams, are a feature of the camps, and there is keen rivalry between the teams from the different wards. Contrary to the generally accepted view that acute gonorrhœa is best treated by avoidance of exercise, the experience of the special hospital at Witley Camp has shown that physical training, by keeping the men busy and diverted, very materially shortens the period of hospitalization. The effects obtained were so good that in the report of his inspection, Major-General F. Howard, Inspector of Infantry, recommended to the Commander-in-Chief that the Witley methods be employed at all military venereal hospitals, as tending so greatly towards military efficiency and saving so much time in training.

Results. Lastly as to the results. I will only trouble you with one set of statistics, but that, I think, shows eloquently the effect of the campaign undertaken by the Director-General through Lieutenant-Colonel Amyot and his staff:

During the month of September, 1916, from nearly 42,000 Canadian troops in Great Britain there were admitted to hospital suffering from venereal disease nine hundred and sixty cases, practically a battalion; during the month of September, 1918, from among 110,000 Canadians in Great Britain, there were seven hundred and fifty similar admissions. In two years the venereal incidence had been reduced more than 66 per cent. It stands now at less than the third of what it did two years ago. Had they continued at the same rate the admissions during the month in September, 1918, would have been not seven hundred and fifty but over two thousand, five hundred; not seven and a half companies, but two battalions and a half out of action.

Inevitably during this period of armistice with beginning demobilization, we are dreading a more serious and sinister increase in venereal disease throughout the country, as the result of the return of the soldier; dreading its effect upon the family. I know that the agitation has already begun in Canada; that there it has been urged that no soldier suffering from gonorrhœa or from syphilis shall be permitted to return to the Dominion, but that such shall be kept here in England in hospital until wholly cured—an impossible recommendation, seeing that cases of chronic gleet and some cases of tertiary syphilis so far fail to react to any known form or

treatment. What is suggested, therefore, is that a certain percentage of Canadian soldiers be kept in hospital in England for the rest of their natural lives.

It is not the civil population that has to fear the soldier, but the soldier the civil population. Throughout the war the soldier has been well cared for, all means have been employed to diagnose venereal disease at its very onset, and to give hospital treatment immediately. It is then that disease is most easily controlled. Every soldier has been warned time and again of the dangers he runs, has been instructed as to personal hygiene, and has been afforded early treatment under supervision. As a result there is no section of the community which at the present time is in a cleaner and healthier state: no section of the community which has less venereal disease. I speak here for the whole body of the Imperial forces. As for our Canadian experience, I may say that this autumn the instruction was given that all soldiers returning to Canada whose medical history sheets bore the record of venereal disease should be given the Wassermann test. I have the August figures, showing that 2 per cent. of the total number returning reacted, and all these were tertiary, non-infectious cases, for no active primary or secondary cases are permitted to return. The average number of reactions in the civil population is estimated at from 8 to 12 per cent. There is four to six times as much syphilis in the civil population as in the army. But in the meantime nothing of any moment has been accomplished for the civil population. Lord Sydenham in his letter to the *Times* of January 7th speaks of the provision of early treatment centres. "We are endeavouring," he says, "to secure the organization of clinics continuously available where early treatment by competent persons can be obtained." But they are not available to-day; they will not at the present rate be available until demobilization—and demoralization—have become a matter of history. To meet the situation they should be scattered thickly all over the country. A man must not have to take a two hours' journey after the act; he certainly will not take it. The dearth of expert syphilologists and of bacteriologists qualified to carry out the delicate Wassermann and other complement fixation tests demands that the centres for ordinary venereal diagnosis and treatment under the Act be few and far between, situated in the great centres of population. It is thus the civil population that to-day constitute the grave danger.

And all these four years nothing has been done to meet the emergency. When our soldiers return and are feasted and made

drunk and solicited and fall, there will be no medical orderly room to proceed to, no provision of early treatment, no non-commissioned officer to see that the elaborate toilet is duly performed. Provision for early treatment will be non-existent. The preventive treatment favoured by Lord Sydenham would at very best be applicable to a fraction only of the population.

Let me repeat the soldier will receive and not give, and, speaking as a soldier and for the soldier with full recognition of the strength and the seriousness of the argument put forward by Mr. Turner and Lord Sydenham, and admitting that the provision of prophylactic treatment to an uninstructed public may well result in the spread rather than the reduction of venereal disease. I am strongly of opinion that the soldier before demobilization should be provided with the means of prophylactic treatment, should be advised where and how to obtain tubes without difficulty, and, moreover, be given precise detailed instructions as to the method of employment. For the good of the country I see no other possible course.

I have spoken frankly. I have here taken a position that on first consideration may not receive the unqualified support of those others who, like myself, realize the vast harm done to the manhood and womanhood of our people, the hideous heritage of disease to this and coming generations—where indeed there does not result sterility or the dead or diseased untimely fruit of the womb—the appalling loss of man power that result from the present state of affairs. But to those who, in the supposed interest of morality would still maintain the policy of silence and would accuse me of propounding an unmoral, if not immoral, policy, I would only repeat what I said in Westminster in July to the National Conference upon Maternal and Infant Welfare:—"Which is the more immoral act: to advise a man how to prevent infection if he has transgressed the moral code, or calmly and coldly to look on without moving a finger while, through ignorance on his part, the innocent wife and children are made diseased, and they and the community suffer through generations?"

And as to this vital problem of the provision of prophylactic or early treatment respectively, which to-day is so stirring us, I cannot recognize any logical intermediary position between regarding as a leper outside the pale of society, the man or the woman who has become infected, and approving of treatment before the act. We cannot take the first position and decide that as the man makes his bed so he must lie upon it, and that because his wife also occupies the bed, and she must be protected. But if we,

therefore, are compelled to treat the disease, the earlier we treat it the surer we are of controlling it. Infection is present from the moment the infecting agents begin their action upon the tissues. It is ridiculous to wait until they have set up lesions recognizable to the naked eye. If it is justifiable to treat the developed disease, it is yet more to afford early treatment; and, if that, then, for security, to make it the rule that after every illicit intercourse the man seeks protection. To direct, as did certain memorable Dead Hand instructions, that preventive treatment must be given in the presence of a bacteriologist after the gonococcus or the spirochaetes have been found actually present upon the organs of generation and recognized under the microscope, is what across the Atlantic is termed "eye wash". And if, as the writer to the *Times* on New Year's Day put it, the critical hour is 11 p.m., and treatment may justifiably be given at 11.15, what objections can be raised to giving it at 10.45? The doctrine that "the sinner must not prepare for immorality, but he may use the best means known to science to escape the consequences"—such a doctrine surely, if not hypocritical, is hypocritical.

But we are not a logical people, and the probabilities are that we will end in some illogical compromise. Yet, unless something be done, and that immediately, the next few months will see such a spread of venereal disease in this country that for generations the Empire will suffer. Now if ever it is well to repeat His Majesty's famous exhortation, "Wake up, England!"

PRINCESS ARTHUR has given over three years of continuous service as a V. A. in a military ward of a hospital, and is now giving all her time to nursing the babies in Queen Charlotte's Lying-in Hospital in Marylebone Road. Night and day the Princess takes her turn at the regular work. Every year over two thousand patients are received at this famous hospital which has been under the patronage of a queen ever since the time of Queen Charlotte in 1810. At present both Queen Mary and Queen Alexandra are patronesses. Since war was declared over five thousand wives of soldiers and sailors have been attended, including the wives of many colonial soldiers. In addition, Belgians and other refugees have received every kindness.

SIMPLE GOITRE

BY MALCOLM H. V. CAMERON, M.B.

Toronto

THE thyroid gland is an organ universally found among vertebrates. Its embryology and physiology are fascinating subjects upon which many papers have been written, its anatomy is interesting and its pathology is of such extent that I cannot hope to cover it in the time at my disposal.

The development of the thyroid is from the cylindrical cells of the thyroglossus duct, according to Crotti, who dismisses the theory of numerous anlagen offered by Piersol. Gaskell has an observation that in certain vertebrates the thyroglossus duct persists as such and opens into the genital tract. The analogue of the thyroid in these cases being, evidently, a sex gland.

Late in foetal life the thyroid has changed its character so that it is a mass of undifferentiated cells which, shortly before birth, pass into the well-known structure of the normal gland.

The mention of these few points is made in explanation of the persistence of masses of undifferentiated cells growing in a thyroid and constituting foetal adenomata and of the finding of accessory thyroids in various locations in the body.

The general points in the physiology of the thyroid are matters of common knowledge. In 1914, this section was privileged to hear Professor Hertoghe, of Antwerp, in an address on hypothyroidism. In that address he taught us many symptom syndromes that were made to respond to thyroid feeding. The effect of thyroidectomy in Grave's disease prove the converse of these conclusions in hyperthyroidism. The conclusions of Plummer point to a most astonishing influence of the thyroid upon metabolism. He refers to the two secretions of the gland as colloid and a hormone which is identical with the crystalline Alpha-iodin compound of Kendall, and states that: "The rate of metabolism is dependent on the thyroid hormone, that this function is not specific but is common to all the tissues of the organism." Kendall published the discovery of his Alpha-

Read before the Academy of Medicine, Toronto, December 17th, 1918.

iodin compound in 1914, and after a repetition of his experiments consuming some fourteen months, published another paper in 1916. In this latter paper he describes the function of the thyroid as the elaborator of a catalyzer, the Alpha-iodine compound, which regulates the rate of deaminization of the amino-acids and as the regulator which gives to each cell its adequate supply of this catalyzer momentarily, the colloid functioning as the vehicle of reserve. He also suggests that the function of the parathyroids is to convert ammonium carbonate into urea and that therefore the urea-ammonia output is a measure of thyroid-parathyroid activity.

Any enlargement of the thyroid gland may be called a goitre, whether due primarily to an increase in the number of acini (adenomatosis), in the size of the acinous cells (hypertrophy) in the number of cells per acinus (hyperplasia), or in the interacinous content. The causes of these enlargements are so numerous that with the definition must go a classification of goitres.

A classification on purely embryological grounds, such as is offered by de Quervain, is scientific, but it is of more academic than clinical interest as, from the latter standpoint, it is confusing.

MacCallum simplifies the classification by describing only two forms, the colloid and the adenomatous, with the latter subdivided into several other forms depending upon changes in the adenoma.

Edmunds, in Chocey's system of surgery, divides goitres into seven classes with several sub classes.

Crotti, with apologies for its deficiencies, offers a clinical classification which is, at the same time, sound and complete in its pathology. In this all goitres are divided into benign tumours, malignant tumours, and tumours of inflammatory origin.

The benign tumours are:

I. Parenchymatous goitre:

1. Physiological (puberty, pregnancy, etc.).
2. Non-toxic.
3. Toxic.

II. Colloid (cysts, fibrous, calcareous and osseous).

III. Foetal adenomata.

The malignant tumours are:

1. Epithelial tumours with seven subclasses.
2. Connective tissue tumours, with six subclasses.
3. Mixed tumours, with five subclasses.
4. Dermoids.
5. Accessory thyroids.

Inflammations:

I. Bacterial:

1. Acute (non-purulent, purulent).
2. Chronic (syphilitic, tubercular and woody thyroiditis).

II. Toxic.

III. Parasitic—Chagas's *chizotrypanum cruzi* and *echinococcus*.

Parenchymatous goitre is characterized by an increase of all the glandular elements of the thyroid. There may be an increase in colloid. There is an increase in iodine content. In its simplest form it is "the hyperplasia for physiological reasons", described by Edmunds. The increased demand for the secretion induced by the strain of puberty or pregnancy is met by this increase in glandular elements, and, lest it pass on to hypertrophy which characterizes the non-toxic form of parenchymatous goitre, it becomes necessary to spare the thyroid by feeding thyroid extract or by administering iodine in some form, preferably and ideally the new Alpha-iodine compound of Kendall. The toxic form will be discussed at length in the paper that is to follow.

Colloid goitre is due to an excess production of colloid which is described as a spongy material which aids in the storage of iodine compound or, as it is termed by Kendall, "a vehicle of reserve" for the hormone of the gland. The excess production of this material, under undue stimulation to hormone elaboration when metabolism is speeded up from one cause or another, may, after the stimulus is removed, leave a mass of colloid which is not absorbed and so be the beginning of a simple colloid goitre, a suggestion made by C. H. Mayo in a paper read in May, 1914. This form of goitre is then characterized by a great increase in colloid material and by a decrease in iodine content. The secreting cells are flattened by pressure and the blood supply to the essential glandular elements is lessened. It may develop into cystic, fibrous, vascular or calcareous goitres, forms whose names are self-explanatory.

Foetal adenomata are rests of the masses of undifferentiated cells which are intermediate between the cylindrical cells of the thyroglossus duct and the typical cells of the normal thyroid gland. These take on growth and are commonly noted at puberty. They are usually non-toxic in character.

Malignant tumours of the thyroid are important, especially in that it is most necessary to differentiate them from benign

goitres at a stage in which operation may give some hope of cure. I have been able to locate two of these among the cases in which I assisted Dr. Silverthorn during the past ten years. I have not encountered any in my own service during the past five years.

Inflammations in the thyroid are bacterial, toxic, or parasitic. Their consequences may vary according as the process occurs in a normal gland or in a goitre. In the past ten years there have been, in the services mentioned, two acute abscesses occurring in normal thyroids. Both were successfully opened. These inflammations are always secondary and, as metastases of every kind are less frequent in the thyroid than in any other tissue, they are not common.

The parasitic forms are most interesting in that Chagas, of Rio de Janeiro, described in 1907, a parasite which he named *schizotypanum cruzi*. This parasite is transmitted by an hæmatophagus insect, and an inflammation of the thyroid, which is very frequently fatal, develops rapidly. Hydatids are rare and are never diagnosed before operation.

The clinical symptoms of simple goitre are systemic disturbances, such as slight thickening of the skin, constipation, apathy, etc., or slight tachycardia, impatience, brilliance of the eyes, nightmares, nervousness, etc. In every goitre there must be a transition stage before the definite symptoms of a degeneration leading to hypothyroidism or to the onset of a toxic condition. The consideration of this fact may lead to an explanation of such phenomena as the "goitre heart". The cause of death in this condition may be a complex mechanism of pressures, resulting in damage to heart muscle, or a series of toxic processes that act within limits that do not result in recognizable symptom syndromes. Some of the symptoms that characterize the onset of the menopause may result from an imbalance in the production and demand for thyroid secretion.

Mechanical symptoms may be present as dyspncea, from pressure upon the trachea, cough from pressure upon the recurrent laryngeal nerves, and venous congestion. Dysphagia may result from intra-thoracic goitre. This latter form may be quite intra-thoracic, having developed from an accessory gland or having gone down from the neck by force of gravity, or it may be of the plunging type. The x-ray may be of great assistance in diagnosing this cause of dysphagia.

The ætiology of goitre is still an unsolved question. Crotti gives a résumé of three hundred and forty-eight authors, and I

have found one at least that he has not mentioned. There is considerable evidence to show that heredity plays a part, particularly in the production of cretins. Just as tuberculosis establishes itself with greater facility in predisposed families, so does goitre or cretinism in a goiterous family.

Goitre in the mother has a greater influence than goitre in the father. Sanitary conditions have an undoubted influence. McCarrison's experiments on fish and sheep show conclusively that filthy living conditions tend to goitre formation. Auto-intoxication has its advocate in Messerli who, in 1915, published certain cures of goitres by disinfection of the intestinal tract. Contagion by contact is not well proven.

All of these theories have their advocates, but the most generally accepted and best proven ætiological factor in the production of endemic goitre is water. When we come to inquire into what is in the water, we uncover a great mass of research. The occurrences of so-called "goitre-belts" is generally accepted but variously explained. In 1883, Bircher concluded that goitre occurred only upon marine deposits and especially upon marine sediments of the paleozoic, triassic and tertiary periods, and that the eruptive rocks, the crystalline rocks of the Archæan groups, the sediments of the Jurassic, Cretaceous and Quaternary seas and all fresh water deposits are free from goitre.

(This summary is quoted from Crotti.)

I endeavoured to confirm this observation, in a measure, as it applies to this locality by inquiring into the geological formation of the rock about Kingston, Ont., which is in the midst of one of these goitre-belts. The limestone there is of the origin noted by Bircher, according to a report issued by the Ontario Bureau of Mines on the geology of Kingston and vicinity written by M. B. Baker in 1916.

If the source of the water be from a marine deposit as stated, or from eruptive sources which give the so-called hypogenic or plutonic radio-active water, as Repin assumes, the guilty content of the water is still to be explained.

There are many theories as to this content. It is described as a colloid substance, removable from goiterigenous water by dialysis, killed by boiling, by treatment with zinc hydrate or hydrogen peroxide. It is described as a radio-active body derived from the plutonic origin of the waters concerned, and it is held to be an infection. How an infection has persisted from the paleozoic age until the present surely demands proof. Another theory is that a

characteristic of goiterigenous water is a content of fluorides. This was advanced in a paper published in the report of the French Academy of Sciences in 1917. Mr. Lancaster of the Provincial Laboratory of Metallurgy undertook to work over these experiments, using waters from Ontario. This task was interrupted, but may yet be undertaken. Should there be a causative association between fluorides and goitre discovered, it will probably be found to depend upon the simple fact in inorganic chemistry that fluorin displaces iodine from its combinations.

Other ætiological factors general to goitres are circulatory disturbances, abnormal nervous stimulations, and absence of iodine in food. Forbes and his fellow-workers published a report upon the iodine content of foodstuffs generally used in various parts of the United States. They found that in goiterous regions the food was not less rich in iodine than in others. Marine, quoted by Crotti, says that twenty years ago, the sheep industry of Michigan received a serious setback because of the number of cretin lambs born. Iodized salt improved the situation. Plummer states the position of iodine in food as a factor in the causation of goitre in succinct form as follows: "Lack of available iodine and strong coincident stimulation may be one of the factors in producing hyperplasia." A parasitic infection as by the organism of Chagas may be a possibility.

The treatment of goitre is prophylactic, medical, and surgical. Prophylaxis may be obtained by avoiding residence in goiterous regions. When a pregnant woman suffering from goitre is obliged to live in a goiterous neighbourhood, she should have treatment with thyroid extract. Nursing women who have goitre should also be sustained by that substance. Hygienic conditions should, of course, be seen to, and, in goiterous areas, the best general prophylactic measure is that of boiling the water for twenty minutes, although Rosenau states that 80° C. is sufficient to destroy the causative agent.

Medical treatment is definitely indicated in many cases of goitre. For example, the hyperplasia of the thyroid seen at puberty may well respond to a general supporting treatment, *i.e.*, syrup of iodide of iron, to a sojourn by the sea, or a substitute for the latter, as advocated in a letter in the *British Medical Journal* some months ago, in the form of a bottle of iodine crystals exposed in the school-room. I am now trying out this method in three or four cases by having iodine exposed in the sleeping-rooms of the young patients, the idea being to spare the thyroid secretion and

so prevent hyperplasia. The similar extra call upon the thyroid, consequent upon pregnancy, may require small doses of thyroid extract during the period of gestation. The miseries of early pregnancy and the discomforts of the latter months are often benefitted to a surprising extent by this treatment.

The diffuse colloid goitre in its early stages frequently responds to the treatment outlined in a most satisfactory manner, even a nodular or cystic goitre may appear to improve very much because the treatment will reduce the associated hyperplasia or parenchymatous hypertrophy.

The toxic forms all benefit greatly and many will be cured by prolonged rest in bed with more or less complete isolation. To this may be added treatment by calcium iodide as advocated by Kummer in a Swiss magazine and reported in "Chemical Abstracts for 1917". The idea in this is to secure a retention of phosphorus and calcium in the organism, it being well known that the physical decline in toxic goitres is not entirely due to organic losses. Quinine hypobromate may also be useful. The work of Janney and of Janney and Isaacson conjointly published in August of this year, quite unsettles the management of these toxic forms. Should the cause be a dysfunction rather than a hypersecretion of the thyroid, as he suggests, the feeding of thyroid extract or the administration of Kendall's hormone may be distinctly indicated, after a preliminary detoxication by rest, intestinal antiseptics and calcium feeding. An excellent case is made out for radium treatment by Dr. W. H. B. Aikins in a paper read before the American Radium Society in June of last year. The paper of Dr. Richards, which is to follow, will deal with the use of x-ray as a method of treatment in simple goitre.

The surgical treatment of goitre recalls the old saying that "an amputation is a surgeon's defeat". Since Kocher and Reverdin began to teach thyroidectomy, it has become more and more the recognized treatment for toxic goitre. In malignant goitre it is the only treatment to be considered, and in advanced colloid, cystic, and nodular forms, medical treatment is useless. The same is true of benign adenomata. Complete extirpation is only called for in malignant conditions. In the removal of all other tumours of the thyroid, sufficient of the gland substance must be left to carry on the normal function or must be transplanted elsewhere in the body. The selection of cases for operation demands the most careful judgement. W. F. Porter advocates the removal of all permanent goitres of whatever character because of their potential

danger to the patient. F. N. G. Starr in the *British Journal of Surgery*, 1916, advocates much the same thing. Many other surgeons are less radical in their views. The new teaching may so modify practice in this regard that thyroidectomy may only be undertaken as a relief to mechanical pressure or as a cosmetic procedure.

Operative technique might well constitute a paper in itself. Doyen describes an operation by which he removes ordinary goitres as large as the fist, in from three to five minutes, and intrathoracic goitres in twenty minutes. This method is not generally practised. The technique published by the Mayo Clinic, or that of F. N. G. Starr, described in the paper referred to, may be taken as among the best in modern practice.

THE reproach that the city of Halifax does not possess one large maternity hospital is about to be removed. The Salvation Army have initiated a "campaign" to obtain a sum of money sufficiently large to justify them in building a thoroughly up-to-date maternity hospital similar to their well-known maternity hospitals in the large Canadian cities. The members of the medical profession of Nova Scotia are particularly interested in the scheme, and some large subscriptions are expected before any appeal is made to the general public. The Governors of Dalhousie University have granted a site on the campus opposite the building on Carleton Street in which the faculties of medicine and dentistry are housed. It is understood that the authorities of the Salvation Army have agreed to a number of conditions, amongst which are that the university lecturers on obstetrics and gynaecology shall have, ex-officio, the right to use the hospital for the instruction of the students of medicine in midwifery and diseases of women.

The facilities to be granted at this hospital are only the beginning of certain movements indicative of the expansion of the clinical departments of Dalhousie University. It is felt that the time has come to strengthen and expand the School of Medicine at Halifax, the only one in the Maritime Provinces and the only one east of Quebec. The erection of a maternity hospital is the most urgent need in connection with the Faculty of Medicine, but it is not by any means the only one; several other departments must soon be enlarged in order to accommodate the greatly increased classes in the first and second years.

VENEREAL DISEASES FROM THE PREVENTIVE ASPECTS

BY CAPTAIN GORDON BATES

Officer in Charge of Venereal Diseases, No. 2 Military District

THERE are so many aspects to this great problem of venereal diseases confronting us, both as physicians and citizens, that one hesitates as to just where to begin and what ground to cover in a brief paper.

In the military hospital with which I have been connected, the base hospital for No. 2 Military District, certain problems both from the aspect of cure and prevention have struck us very forcibly. In the past we have been prone to forget the fact that venereal diseases are preventable diseases just as are malaria, typhoid fever and yellow fever. The fact that the great discoveries connected with the diagnosis and treatment of these diseases have been made comparatively recently has meant that these phases of the question have not met with the attention they have deserved. Again we have not studied the causal factors involved, nor have we given sufficient attention to the far-reaching results of syphilis and gonorrhoea—actually unspeakable calamities of a widespread character.

I would like to say something to you as to the treatment of venereal disease from the preventive aspect. The primary sore of syphilis should be diagnosed early, because the resultant early treatment will mean the prevention of serious results which may ensue if the case is allowed to progress to the secondary stage. Gonorrhoea should be treated early for a similar reason. Both diseases should be carefully controlled, treated to the bitter end and *educated*, because as physicians we must cure disease, and because as citizens we must appreciate the serious consequences to the community at large which must ensue if individual cases are permitted to progress or to pass on their infections to others. It is therefore essential that we be fully conversant with every possible instrument which we may use.

Read before the annual meeting of the Medical Society of Nova Scotia, Liverpool, N.S., July 3rd, 1918.

I would like to emphasize here the fact that venereal diseases are essentially a civil problem. Obviously infections in the army are contracted from civilian sources. All the statistics we have collected to date go to prove the much greater incidence of venereal diseases among the ordinary population than in the army, as well as the steady decrease in military incidence as educational and other preventive measures instituted in the army have improved and progressed. The weekly inspection of the soldier for the detection of venereal disease, the distribution of official educational literature to every soldier, organized recreation, immediate isolation of all cases on discovery until cured or non-infective, careful education of the infected man on the dangers of his disease to himself and his future wife and children (again by means of specially prepared literature), such measures provide preventive machinery of a character such as has not been thought of by civil authorities until very recently. The result of the lack of such constructive work on their part has been, that a large percentage of the civilians who have been put in uniform since the beginning of the war have been found to have been venereally infected previous to enlistment. I could quote you a number of statistical records to prove this point. For instance, I am told that of the men now in category D in No. 2 Military District, 50 per cent. owe their status to venereal infection. In a recent enquiry instituted among venereally infected men, returned from overseas, we found that the large majority of this class had received their infection not only before leaving Canada but actually before entering the army at all. This is true, I should say, of 90 per cent. of such men. Such statistics (and I could quote you a number more) go to prove that we as civilians with a proper sense of community responsibility have something serious to think about. In an assembly such as this it is unnecessary for me to refer at length to the statistics of asylums and of gynæcological wards in support of this statement. I would like to touch on the fact that deaths or disabilities coming from general paresis, locomotor ataxia, apoplexy and gonorrhœal ophthalmia are a serious factor in producing far reaching social effects throughout the country. The same may be said of the many mutilating operations on women as well as the miscarriages, and sterility in men and women resulting from gonorrhœa and syphilis. Inefficiency among workers resulting from these diseases or their end results, mean the robbing of the country of work which should be utilized for the country's good. Death (syphilis alone is classified by Osler as one of the four greatest killing diseases) particularly unnecessary death

—and death from syphilis is unnecessary—means problems unfairly thrust upon the widow and the orphan, problems which only too frequently remain to be settled by the taxpayers, through the juvenile court, the insane asylum and the prison.

Investigation into the medical aspects of the question has revealed one factor to which the physician, in particular, must give more attention in the future. Venereal diseases, throughout the country, have been badly diagnosed and badly treated. Many patients for various reasons have not completed their treatment, with serious results both to the individual patient and the community.

One most erroneous idea has been the prevalent notion that uncomplicated soft chancre is common, with the resultant non-recognition of primary syphilitic sores. My experience has been that 90 per cent. of men with penile sores eventually develop a positive Wassermann reaction. Actually the typical deep, clean cut ulcer of chancroid is very uncommon. One will meet twenty syphilitic sores, mostly atypical and non-hunterian to one of simple chancroid.

Again the case of syphilis absolutely without symptoms is not uncommon. This fact has been forcibly brought to mind recently by observing cases where men without symptoms have married and infected their wives. This type of case is not only dangerous to others, but, in that his case is commonly undiagnosed, doubly dangerous to himself. He has provided in a large measure the explanation of the many cases of general paresis, locomotor ataxia, aortic aneurysm and early apoplexy in which there is no history of syphilitic infection and therefore (and this is the serious part) no history of treatment.

Another discovery with a definite relation to the same serious result is, that many cases of late syphilis give a history of having had their local sores treated by means of some caustic such as silver nitrate. This was commonly followed by no systemic treatment, the assumption being, of course, that the case was one of chancroid. Intra urethral chancres are also frequently mis-diagnosed with the same result.

Another proof of the number of syphilitic cases missed by ordinary clinical examination has been found in our routine Wassermann examinations. Recently in a regiment of draftees supposedly free from all infection, we found that 5.7 per cent. of the men gave a positive Wassermann reaction. Most of these men did not know they had ever been infected. Such results mean that in the more

distant past accurate methods of diagnosis were not available, while more recently they have not been utilized as they might have been. This applies both to the use of the dark field method in the examination for spirochætes and the use of the Wassermann reaction. Dark field examination is a simple method which should be used on all penile and other suspicious sores; followed, of course, by a Wassermann reaction or reactions at a time when systemic infection has had time to develop (generally four weeks). In all cases in which the clinical diagnosis is positive, energetic arsenical and mercury treatment should be begun at once whatever the result of the dark field and Wassermann. The discovery of spirochætes in a penile sore (or a positive clinical diagnosis) in the absence of a positive Wassermann is extremely important in that if active arsenical treatment is instituted at once, 50 per cent. of such cases may be aborted; while in all such cases the duration of treatment may be materially shortened. Perhaps it is unnecessary for me to emphasize the necessity for the unstinted use of the Wassermann reaction in blood and cerebrospinal fluid in many cases in which there is no particular reason for suspecting syphilis and absolutely no history of infection. Every effort should be put forth to make these laboratory procedures available to the poorest patient. They are now undertaken for any physician free of charge by the Ontario Government. I feel that this is the only proper method of dealing with the situation.

That gonorrhœal infections, both in the male and the female, have not been adequately dealt with in the past is also easily proven by the large number of old chronic cases with slight symptoms which are commonly found on routine inspection in the army. Such cases were almost invariably infected previous to enlistment. Many of them have been self treated by such concoctions as Knoxit. Many others have had internal treatment by physicians who have used copaiba or sandalwood oil for a short time and let it go at that. These preparations, of course, while useful for the treatment of certain symptoms are almost valueless as curative agents. Quite commonly local treatment has not been given. Littritis, vesiculitis, and infected prostates have not been treated at all, and not infrequently, never discovered. The two or three glass test, for the discovery of lurking infection and its site, is commonly not used. The patient, discovering that his discharge has stopped, has discontinued treatment, and not infrequently passes his infection on to others—perhaps he even marries and passes it on to his wife. This does not mean necessarily that he is a wicked or a thoughtless

man, but simply that he believes himself cured and has no conception of the seriousness of his disease. As a matter of fact, none of us have had a real understanding of these diseases up to a comparatively recent time—neither as to their cause, their course, nor their results. The public has been woefully ignorant on the subject. The physician himself has not understood.

It is perhaps not common knowledge that acute gonorrhœa may be absolutely cured in less than a week by means of the Ballinger sealed-in treatment. The greatest importance of this method is its relation to early treatment, as unless cases report within twenty-four hours after the appearance of their first symptoms, it is not generally applicable. In cases in which treatment is commenced previous to this time, 90 per cent. may be cured within the time limit mentioned.

It seems to be necessary that some method of enforcing education and treatment, as well as making treatment easily available, be found. Happily, a realization of this fact has become somewhat general. In a number of States in the United States such legislation has been passed, as well as in four provinces of Canada, during the last few months. The success of this legislation will depend largely on the support it receives from the physician. His will be the opportunity to watch carefully over cases until their treatment is completed and to make momentous decisions which, unmade in the past, have resulted in disastrous consequences. The opportunities for educating patients in the dangerous and insidious character of their infection as well as the difficulties of cure will be a valuable one. It should be incumbent upon every physician to give his patient educational literature and if I may make the suggestion, moral instruction as well. I feel that a talk straight from the shoulder as to what the consequences of immorality are sure to be, is a simple duty, which every physician should take upon himself when dealing with infected patients.

For the present, reporting by number is a valuable provision, which, if carefully adhered to by physicians during the next year, will have a great effect in educating public opinion in the prevalence of venereal diseases in the community in which they live. Personally, I think it should be followed by reporting by name, but perhaps we are not ready for that radical step yet.

A further step which might be of the greatest value is some provision by which sources of infection may be traced out. In Toronto we have undertaken by means of the social case sheet to find venereally infected women who have acted as sources of infec-

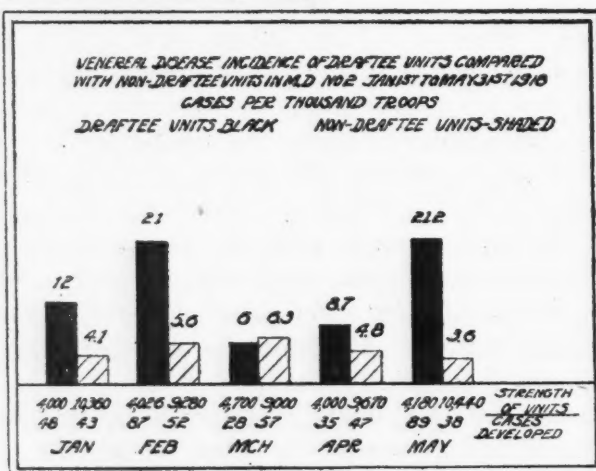
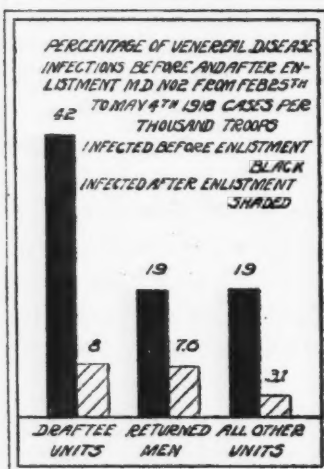
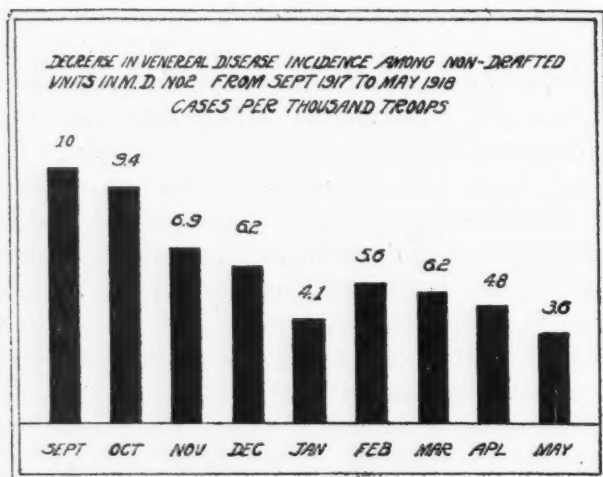
tion for men in the army. Each man is closely questioned as to the name and address of the infecting woman, and afterwards the services of the social service nurse, or, if necessary, the police have been utilized in order that she may receive instruction and treatment. Recently at Toronto General Hospital an experimental social case sheet was tried out for women attending the venereal clinic. In about half the cases questioned, it was found possible to obtain the name and address of the infecting man. This method, particularly with the aid of new legislation, may well prove a valuable means of helping to deal with this extremely difficult problem.

Other possibilities such as that of a medical examination before marriage occur to one. This procedure will be found to be an essential one as soon as public opinion is ready for it. The immediate necessity is the backing up of the legislation we have.

I would that at this time I could spend some time discussing the social aspects of the venereal disease problem, because only by an understanding of that aspect of the question will we ever be able to really deal with it. The fact that (prostitution) is at the bottom of the existence of venereal disease throughout the country, must never be forgotten, and every effort should be made to study that nefarious trade with a view to sweeping it off the face of the earth. It has definite causes, and the physician with his intimate knowledge of its serious results in the production of disease and death, should play a large and important part in inducing the public to discuss it, and in leading movements for very necessary reforms.

Recent studies in Toronto have proved to us that the cases of venereal infection we are getting originate from all parts of Canada. From Ontario alone we have received cases from practically all corners of the province. This, of course, means that sexual immorality of a widespread character exists—as the result of causal factors which must be operating everywhere. We have also discovered that the type of prostitute (I mean the female prostitute, but the term might be fairly applied to the male) differs in different localities. For instance, in Toronto where there are no organized disorderly houses, we have to deal with the young girl who, working during the day at some ill-paid occupation, at night, sells herself to any stranger for \$2.00. In other places, notably Montreal, organized prostitution exists on a large scale, and the prostitute makes her entire living from prostitution.

That such conditions exist in Canada is indeed shocking, but the problem is full of encouraging possibilities when we go into the



question and find that we have in the past made no provision for teaching our young men and women not only that venereal diseases are dangerous, but that the function of sex is a sacred function with which may be bound up the expression of highest and noblest emotions—and that it should not be meddled with. Nor have we remembered the opportunities which our young men and women should have, the opportunity for healthy recreation, for normal clean companionship with the opposite sex, for marriage when nature intended it and all that the establishment of a happy home means, for happiness in work, for a good education. To how many of our normal young Canadians, particularly in the industrial sections of our large cities, are these opportunities denied? The relation of the feeble-minded prostitute to the question is also an important one.

All of these problems are capable of solution if we will but organize. We must provide our young men and women with the normalities of life. We must give them a chance. Our existing organizations are able to care for the problem to a large extent at least. The Y.W.C.A., the Y.M.C.A., the Red Cross, the churches, particularly if acting in co-operation with committees of public spirited citizens, can do a great deal even during the period of the war. Sex education can be taught and should be taught by parents if we only tell them how. Unsupervised dance halls, dangerous foci of immorality in the cities, can be superseded by dances under adequate supervision, supported by our citizens and held in our schools and parish halls. I say this in full knowledge of the fact that this has already been done in other places. The hostess house of the military camp can be succeeded after the war by the house downtown where young men and women may meet under natural and healthy circumstances. The model boarding house for girls—with an assembly hall where mixed dancing or organized recreation is allowed, should be encouraged and instituted by our national organizations. Our city parks, in which a great deal of prostitution actually takes place, should also be utilized to a greater extent than at present for organized recreation, such as, community singing and dancing. Alcohol as a serious factor is happily being eliminated. The low wage is, of course, a factor, but the greatest factor is our incorrect attitude toward the whole question. Generally the immoral person—the prostitute—is not to blame in anything like such a degree as the community—and you and I as members of the community should realize that fact.

Careful consideration of the venereal disease problem will

make us realize that bound up with it are very great opportunities for public service. The greatest opportunity of all is that given the physician. First of all he should lead in the present movement in order that all infected individuals may receive treatment. Then he should lead his community to a clearer understanding of what should follow. A clear vision and action should mean much, not only for the unfortunate infected man or woman but, also for those of our own generation whose health and happiness are much concerned; for those of future generations and for the general efficiency and real greatness of our whole country.

MAJOR F. M. WELLS, C.A.D.C., was deputed by the military authorities at headquarters to visit military district number six and deliver a short course of lectures on researches on scurvy, rickets and oral antiseptics. Major Wells gave two lectures at Dalhousie University on February 24th and 25th, which were illustrated by lantern projections and microscopic preparations. The microscopes and lantern were lent by the Department of Physiology. The lectures were based on research work Major Wells has been doing at the Lister Institute in London. The demonstrations showed that scurvy was, as far as the teeth are concerned, a condition of hæmorrhage and greatly dilated blood vessels in the bulb accompanied by necrosis of odontoblasts. If the processes had not gone on too far, the condition could be recovered from by giving vitamins as they exist in fresh milk, by the absence of which the scorbutic condition had been brought about. Professor Nicholls in moving the vote of thanks brought out a number of interesting but puzzling points in the pathology of scurvy and rickets. The low anti-scorbutic power of dried or preserved vegetables was an important point brought out by Major Wells, who said that orange juice was the best anti-scorbutic and potato next.

The second lecture was devoted to an examination of the efficiency of various oral antiseptics, mouth washes, etc. He found that a mixture of "flavine," "desoxycholate" and quinine was by far the most effective. Some substances devitalized the nasal mucosa to such an extent as to render them relatively of little value.

An invitation to attend these lectures had been extended to the civilian medical practitioners and to undergraduates in medicine.

CAUSES AND CONSEQUENCES OF DISTURBANCES OF RESPIRATORY RATE AND RHYTHM

BY LIEUTENANT-COLONEL J. C. MEAKINS, C.A.M.C.

Montreal

THIS communication is not nearly as formidable as the title might suggest, which gives one the impression of being very profound and exhaustive. As a matter of fact you will very likely find the matter to be presented both uninteresting and incomplete. My main object in selecting this subject is to place before you one phase of the medical development of the war. In all previous conflicts the casualties could be roughly divided into two large groups, namely, wounds and intestinal infectious diseases. Since April, 1915, when the Germans introduced a new arm of offence, namely, "gas warfare," the respiratory system has taken the place of the digestive system as a vulnerable point. While typhoid fever, cholera, and dysentery became diseases of almost insignificant incidence on the Western front—gas poisoning with its respiratory symptoms became a cause of casualties of the first importance. During the year of July, 1917, to July, 1918, a considerable number of the total casualties of the British armies were due to this method of warfare. As a consequence, efforts were concentrated on the elucidation of many respiratory conditions. I propose to deal to-night with a small portion of this work, which has a direct application to clinical medicine.

In order to clear the way I wish to say a few words concerning the normal regulation of respiration. It is primarily regulated by the action of the H-ion concentration of the arterial blood upon the respiratory centre. This action is an extremely delicate one, and variations to which the respiratory centre responds are impossible of determination even by the most recent electrometric methods. Under normal conditions the H-ion concentration is kept in equilibrium by the CO₂ tension in the arterial blood. Under given conditions this CO₂ tension remains remarkably constant, as is shown

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by the alveolar air CO_2 , which is equivalent to the CO_2 of the arterial blood. This is accomplished by the action of CO_2 on the respiratory centre, which stimulates this centre to send impulses to the subsidiary centre which controls the rhythm of respiration. The greater the CO_2 tension of the arterial blood supplying the respiratory centre, the greater the impulses to the subsidiary centre, and the greater the pulmonary ventilation. For example, an increase of 0.2 per cent. in the alveolar CO_2 will double the total pulmonary ventilation. This increase of total ventilation is first obtained by increasing the depth of each respiration. "The depth of respiration is controlled by a reflex first discovered by Hering and Breur in 1868. They found that on distention of the lungs to a certain point, inspiration is inhibited and expiration initiated, and similarly that on collapse to a certain point, expiration is inhibited and inspiration initiated; also that the nervous impulses concerned are conveyed by the vagus nerves, so that on section of the vagus these reflexes disappear. Haldane and Mayrordato recently showed that the Hering-Breuer reflex is controlled by the CO_2 in the blood reaching the respiratory centre, so that with more CO_2 in the blood the limits of distention and collapse at which the reflex appears, become wider apart, while at the same time the inspiratory or expiratory response is stronger. In this way the breathing becomes deeper or shallower and at the same time more energetic or less energetic, with increase or diminution of the CO_2 in the blood." *

If the CO_2 tension in the blood increases, the depth of respiration increases—the same result is obtained if the Hering-Breuer reflex becomes more sensitive, as the points of the reflex will then separate with a diminished CO_2 tension in blood. The converse occurs and the depth of breathing becomes shallower, if the Hering-Breuer reflex becomes less sensitive to the action of CO_2 .

The action of CO_2 can be very easily demonstrated upon ourselves. If, for example, forced breathing is carried on for a short while, it will be followed by a distinct period of apnoea of a longer or shorter duration until the CO_2 has again accumulated in the arterial blood. On the other hand, if air containing an increased amount of CO_2 (say 3 per cent.) be breathed, the respirations will become distinctly deeper, although no more frequent.

In addition to the above there is another factor which may

* Haldane, Meakins and Priestley—Reports of the Chemical Warfare Medical Committee No. 11.

stimulate respiration, namely: want of oxygen. When want of oxygen stimulates the respiratory centre, there is a somewhat similar effect, but the breathing soon becomes progressively faster and shallower than when CO_2 is the stimulus.

Want of oxygen, or anoxæmia, may be acute or chronic. The most constant signs are cyanosis, dyspnoea, hyperpnoea, Cheyne-Stokes breathing, weakness, dizziness, mental changes, tachycardia, *polycythæmia*, lowering of the CO_2 threshold, and diminution of the alkali reserve. The last three may be looked upon as compensatory phenomena.

Having briefly reviewed the regulation of breathing, I will mention some of the more important variations which occur. These variations may be of depth, or of rate, or a combination of these:

1. Normal rate with greatly increased depth—as in severe diabetic acidosis.
2. Diminished rate with little change in depth—as in morphine poisoning.
3. Increased rate and increased depth—as in severe muscular exertion.
4. Increased rate and diminished depth—as in gas poisoning and pneumonia.
5. Periodicity of rhythm or Cheyne-Stokes breathing.

To discuss all these changes in full would occupy much more time than I have at my disposal to-night; but I may briefly review them and discuss more fully one or two of the more important.

1. The respiration of diabetic acidosis is well known to all of you. The deep stertorous breathing gives abundant evidence of increased total ventilation. During the early stages of the acidosis the formation of ammonia and eliminative power of the kidneys keep the H-ion concentration in gross equilibrium. When, however, these fail and the H-ions increase, the respiratory centre is stimulated, and showers impulses to the sub-centre to increase the pulmonary ventilation. The points of the Hering-Breuer reflex widen, each respiration becomes deeper in the vain attempt to eliminate enough CO_2 to return the H-ion concentration to normal. I wish to emphasize this character of the breathing of true acidosis—the enormous depth of the individual respirations.

2. The action of morphia upon the respiratory centre is to depress it or make it less sensitive to the action of CO_2 . The alveolar CO_2 and the CO_2 content of the blood are raised. This causes an increase in the CO_2 capacity or "alkaline reserve" of the

blood, due apparently to the passage of alkali from the tissues into the blood.

3. In severe muscular exertion there is an increased production of CO_2 and lactic acid. This quickly increases the H-ion concentration of the blood and there is an immediate response of the respiratory centre to reduce this by increased elimination of CO_2 . This elimination is at first accomplished by the widening of the points of the Hering-Breuer reflex, or in other words, an increase in the volume of the individual respirations. Eventually this will be supplemented by increase of the rate.

4. It is with the type in which the respirations are rapid and shallow that I wish to deal more particularly to-night. The researches upon which my remarks are based were done by Professor Haldane, Captain Priestley, and myself at No. 15 Canadian General Hospital. Our main problem was to investigate the respiratory disturbances following pulmonary irritant gas poisoning.

"It is now generally admitted that in acute gas poisoning the main danger to life arises from impaired oxygen supply to the tissues. This is due partly to imperfect oxygenation of the blood passing through the lungs, and partly in all probability to obstruction in the pulmonary capillaries. The failure in oxygenation has also hitherto been attributed to the layer separating the air in the lung alveoli from the blood being thickened by inflammatory change and exudation of liquid. In some cases there is little if any evidence that this thickening has ever existed. Our first idea was, that part of the thickening was still present, so that slight anoxæmia is present on exertion, owing to oxygen not being able to pass in quickly enough to meet the increased demand. Many of the symptoms, such as the slight polycythæmia observed by Captains Hunt and Price Jones, the slightly lowered alveolar CO_2 percentage observed by Lieutenant-Colonel Douglas, and the slight blood acidosis observed by Mr. Barcroft, could then be interpreted as changes compensatory to the slight anoxæmia and similar to those known to occur in normal persons at high altitude. Our first step was to test this theory by making patients ascend a stair while breathing a mixture of oxygen and air from a small mine rescue apparatus. The subjective relief from respiratory and cardiac symptoms was very marked, and in one of the patients, whose lips became distinctly blue on ascending the stair while he was breathing ordinary air, the blueness was entirely absent with the oxygen mixture.

"These experiments seemed, therefore, to confirm the theory; but further consideration soon showed that something was wanting

in the theory. In the first place, it became more and more evident that the symptoms in the gas poisoning cases were similar to a group of symptoms occurring also in the cases classified for military purposes as "irritable heart" or "disordered action of the heart", and diagnosed under various headings in civilian practice. In the second place, it was found that though the symptoms on exertion were ameliorated during the breathing of oxygen, they were not removed, and that certain very marked objective symptoms persisted, even when oxygen was breathed. Of these symptoms the most striking was excessive frequency combined with abnormal shallowness of breathing. In a normal individual the breathing becomes much deeper, as well as more frequent, on exertion; and usually the increased ventilation of the lungs is attained by increasing the depth, rather than the frequency of breathing. In the patients, on the other hand, the increased ventilation was attained mainly by increased frequency, so that on an ordinary exertion, such as walking, the breathing went up to 60 or 70 a minute, whereas in a normal individual there is usually very little increase in frequency, but a very large increase in depth.

"The shallow breathing seemed to be in some way connected with the signs already referred to, of distinct anoxæmia, particularly on exertion.

"Our next step was, therefore, to endeavour to discover the connection. For this purpose we devised an apparatus for artificially limiting the depth of breathing in a normal subject. With it we were not only able to regulate the depth of breathing without interfering with the rate, but we could obtain a graphic record of the actual volume and rate of the respiration.

"The results obtained with this apparatus were a great surprise to us and have thrown quite a new light, not only on a large number of clinical symptoms associated with dyspnoea, but also on the physiology of respiration, and particularly the effects of diminished barometric pressure and of air partially deprived of oxygen. When the depth of breathing is restricted by suitable setting of the apparatus, it is of course necessary to increase the frequency of respiration. If the restriction is only moderate, everything seems—at first—to be all right; the restricted depth being compensated for by increased frequency, so that the subject gets as much air as before, or a little more. In most persons, however, the breathing soon becomes periodic, and the *periodicity* is a reproduction of typical Cheyne-Stokes breathing. The pauses may be complete, or only partial. When they are complete, the periods of apnoea may last about as long as the periods of breathing. Dur-

ing the periods of breathing the respirations begin very gently and gradually 'wax' until there is urgent hypernœa, after which they 'wane' till they cease, and a new period of apnœa begins. Apart from the Cheyne-Stokes breathing, there are subjective symptoms familiar to us as those produced by slight anoxæmia. Headache and depression follow the experiment if it is continued for long. When a little oxygen is added to the inspired air, the Cheyne-Stokes breathing and other abnormal symptoms disappear completely.

"The fact that Cheyne-Stokes breathing is abolished by inhalation of oxygen was discovered at Guy's Hospital by Pembrey and Allen in 1905. In 1909, Douglas and Haldane found that temporary periodic breathing can easily be produced in a large proportion of normal persons, particularly if the oxygen percentage of the inspired air is low. They showed that the periodic breathing is dependent on recurring anoxæmia, and is due to the very rapid action of the anoxæmia on the respiratory centre as compared with the slower action of CO_2 .

"By means of our apparatus we could completely reproduce the classical rhythm of Cheyne-Stokes breathing, and there could be no doubt that in some way it was due to anoxæmia.

"On investigating the deep alveolar air we found that on an average there was no diminution in the alveolar oxygen percentage. On the contrary, the average alveolar oxygen percentage became higher if the restricted breathing was continued; and even at the end of each apnœic period the alveolar oxygen percentage was scarcely reduced below normal. What, then, was the cause of the anoxæmia, and how could the conjunction of anoxæmia and high alveolar oxygen be explained?

"A sample of the deep alveolar air collected by the ordinary method of Haldane and Priestley has, during rest, a certain very definite composition; but there is no evidence that this composition is the same all over the lungs. We only know that the sample gives the *average* composition. From the shape of the curve representing the CO_2 content of blood saturated in presence of varying percentages or partial pressures of CO_2 it is evident that if the *average* percentages of CO_2 in the alveolar air is steady, the saturation with CO_2 of the mixed arterial blood leaving the lungs will also be practically steady. Assuming, therefore, that it is the CO_2 content of the blood that determines the breathing, the fact that the *average* CO_2 percentage in the mixed alveolar air is steady affords no evidence that the CO_2 percentage is uniform throughout the lungs. The CO_2 percentage may be higher and the oxygen per-

centage much lower in some parts than in others, since in a badly ventilated part the partial pressure of CO_2 may rise to that of the venous blood, while the partial pressure of oxygen may fall to that of the venous blood. But the curve representing the oxygen content of blood saturated in presence of different oxygen percentages in air is totally different from the corresponding curve for CO_2 , and on examining the former curve it will be seen at once that a better ventilated part of the lung cannot compensate as regards oxygenation of the mixed arterial blood for a badly ventilated part. Hence if different parts of the lungs are very unequally ventilated and the breathing continues to be regulated only by the CO_2 of the blood, the mixed arterial blood will be deficient in oxygen although it is normal as regards the CO_2 content.

"Now there is strong direct evidence that during ordinary inspiration the expansion of the lungs occurs at first locally in the immediate neighbourhood of the moving chest wall and then spreads gradually to the rest of the lung as the inspiration progresses. The evidence on this point has been ably marshalled by Keith. He compares the expansion of the lungs to the opening of a Japanese fan rather than to the expansion of an elastic bag. It is easy, therefore, to see that when the breathing is shallow, the ventilation of the lung alveoli must tend to be very uneven. Practically speaking, only the parts of the lungs next to the moving chest walls and diaphragm will expand, and the alveoli in the other parts will be ventilated by indirect means, such as diffusion and air-oscillations produced by the heart's action, etc. In this way we can explain in a perfectly satisfactory manner the partial anoxæmia which accompanies shallow breathing. We can also understand much more readily how certain physiological reactions to slight anoxæmia show themselves with even a relatively small deficiency in barometric pressure. These signs are increase in the hæmoglobin percentage of the blood, fall in the steady level of CO_2 pressure in the alveolar air and of CO_2 content in the arterial blood.

"The symptoms which accompany the shallow breathing are apt to be worse at night. Sleep is often disturbed in various ways, as by dyspnœic attacks often associated with coughing, or by vivid unpleasant dreams. At the best, sleep is usually unrefreshing, so that the patient is out of sorts in the morning. We therefore investigated the influence of the recumbent position on the symptoms produced by our apparatus for restricting the depth of breathing. The effects were most striking. Thus a slight degree of restriction which produced no noticeable periodic breathing in the

upright or sitting position, produced typical Cheyne-Stokes breathing in the recumbent position; and greater degrees of restriction caused more urgent symptoms of anoxæmia. When the breathing was restricted by confining the abdomen or the thorax by means of a firmly applied flannel bandage, or a tight corset, similar symptoms—more marked in the recumbent position—could be produced. The uneven expansion of the lungs is evidently exaggerated by the recumbent position or restriction of the natural mode of breathing. We found also that in ourselves natural breathing is much less frequent; and also deeper on an average, in the recumbent than in the upright position. Thus the increased depth of breathing appears to counteract partially the natural tendency towards uneven lung expansion in the recumbent position. I do not propose to discuss this matter in further detail at present. It is clear, however, that when there is abnormal reflex restriction of the breathing, the recumbent position must tend to increase the anoxæmia. An explanation is thus afforded of a very common, and hitherto unexplained, clinical symptom, namely: orthopnoea. In cases where orthopnoea is very marked, the recumbent position produces the alarming feeling of suffocation which is so characteristic of acute anoxæmia.”*

In the cases under consideration there is an evident abnormality in the effects on the respiratory centre of the stimuli governing respiration. The stimuli due to distention or collapse act prematurely. What the fundamental cause of this upset of the reflex is, I will not discuss to-night. Our chief interest lies in the consequences, or the deleterious effects of rapid shallow breathing, which if persisted in beyond a certain degree, produces an increasing anoxæmia which in turn accentuates the rapidity of the respiration. In this manner a vicious circle is established which will evidently produce a condition incompatible with life.

Although this condition has been chiefly investigated in relation to patients recovering from irritant gas poisoning, other striking and important examples may be cited. Perhaps one of the most urgent is pneumonia. We are all familiar with the dyspnoea which occurs in this disease—that typical rapid and shallow type.

The rapidity and shallowness of this breathing is not due to the extent of pulmonary involvement, else why should it suddenly cease after the crisis when the involvement remains unaltered? Likewise there is no direct relationship between the extent of the

* Haldane, Meakins and Priestley—Reports of the Chemical Warfare Medical Committee No. 11.

consolidated area and the rate of respiration. There is apparently some profound influence being exerted upon the respiratory reflex—very probably through the vagi.

The sequence of events in these cases is almost constant. The respiratory rate rapidly increases to between 40 and 50; it may remain at this point, the colour remaining good and the pulse rate, volume, and tension, quite satisfactory. If the rate increases over 50 and remains there for any length of time, cyanosis begins to develop. This is an absolute sign of anoxæmia. Following the development of the cyanosis, the pulse begins to fail and collapse of the circulation rapidly ensues. The patient then assumes a greyish colour. This is cyanosis of the most profound type and is associated with vasomotor paralysis, hence the greyish hue in contradistinction to the full plum colour when the vasomotor system remains competent.

Although the battle against the infecting organism must continue, we must not lose sight of the extremely vital disturbances of function which appear in conditions like pneumonia. The only therapeutic agencies which we have at the present to combat this type of respiratory abnormality, are morphia, carbon dioxide, oxygen and venesection. The use of morphia before anoxæmia has developed would seem to be most rational as its action is to depress the respiratory centre or to render it and its associated reflexes less excitable. It must, however, be used with caution, and in small doses and the effect closely watched. When failure of the circulation has developed, great caution should be used as at this time the respiratory centre is very likely fatigued through being whipped too much by both CO_2 and anoxæmia, and further depression may accentuate the condition.

As yet the therapeutic value of CO_2 in certain respiratory disorders has not been extensively investigated. The theoretical indications are that it has a definite field which has been very little worked.

The use of oxygen has passed through many phases of enthusiasm and condemnation. But like any other method of treatment, it has to be used with intelligence and with a realization of what oxygen can and cannot do. The usual method of spraying the atmosphere near the patient with a stream of oxygen is absolutely useless and is money thrown away. If oxygen is to be used with best effects, it must be early in the stage of blue cyanosis and in a proper manner. By enriching the oxygen in the inspired air by four to five litres a minute, the maximum effect of oxygen will be obtained. This oxygen, however, must be intimately mixed with

the inspired air by means of a proper mask. Furthermore, the oxygen must be given continuously. A very satisfactory means of administering oxygen in this way has been devised by Haldane for use in the treatment of acute gas poisoning. This has been so modified that it can be carried on the stretcher and oxygen used as long as it be necessary. There is no doubt that thousands of lives have been saved by the proper use of this apparatus.

In venesection we have a therapeutic measure, little, if any, secondary in importance to oxygen, in these conditions. A comparison of the two would be idiotic; each has its indications and, when used properly, may give brilliant results. When cyanosis is well developed and the pulse begins to fail, it is almost certain evidence that the right heart is overburdened and that the venous pressure is too high. If this be not relieved by bleeding, shock and collapse of the cardio-vascular system soon will follow with all the attending phenomena of concentration of the blood, progressive diminution in the CO_2 capacity, or alkali reserve of the blood, or to deeper effects of which CO_2 capacity is an index. At present such effects are generally known as "acidosis", which may mean much or nothing, depending upon the interpretation. In order to relieve this condition of impending cardiac and vasomotor failure, venesection is of prime importance. In the grey stage of shock or collapse this may be impossible through the concentration of the blood in the veins; then a hot saline infusion is indicated in one arm and a free venesection from the other.

Gentlemen, in conclusion allow me to presume to address to the surgeons, one word of advice and counsel. In the present-day literature a glib discussion is now proceeding as to so-called "acidosis" being the cause of surgical and traumatic shock. That such an "acidosis" or reduction of the alkali reserve or CO_2 capacity of the blood does occur, under these conditions, there is now no doubt, but a careful analysis of the evidence and experiments by a special committee leads to the conclusion "that 'acidosis', a simple reduction of the bicarbonate of the blood plasma, is not a cause of shock or an important factor in its production."*

To those interested in this subject of shock I would advise careful perusal of the respiratory aspect of the question. Too long has clinical medicine and surgery looked upon disturbances of respiratory rate and rhythm as a chapter finished and closed when Skoda wrote on percussion and Laennec instituted auscultation.

* Reports of the Special Investigation committee on Surgical Shock and Allied Conditions No. 7.

A REPORT OF TWO CASES OF SPINA BIFIDA

BY MAX O. KLOTZ

Ottawa

A REPORT of the following two cases of spina bifida, operated upon successfully, is justified by the comparative rarity of the affection, occurring as it does about once in one thousand births, and further, by the relatively small number of cases which are at all suitable for operative interference.

Spina bifida cases are divided generally into three classes: (1) simple meningocele, a protrusion of the meninges which contains cerebro-spinal fluid only; (2) myelo-meningocele where, in addition to the meninges, a portion of the cord or some of the nerve filaments are involved in the hernia; (3) syringo-meningocele, where the pressure is within the cord itself, producing a protrusion of the neural canal through the bony defect.

For years the teaching has been that the condition, which may occur at any point of the vertebral column through which the cord passes, was due primarily to a congenital bony defect in the arches of the vertebræ. It is now, however, generally accepted that it is due rather to an excessive secretion of cerebro-spinal fluid, the increased pressure of which during foetal life produces a pure hernia, and this hernia is most likely to take place in the cervical and lumbo-sacral portions of the spine where ossification occurs late.

A very large percentage of these cases is associated at birth with a hydrocephalus, or, if not then, develop that condition before they finally succumb. It is obvious therefore, that the mere removal of the sac is not going to be of any benefit to the patient unless means can be taken to prevent the development of the hydrocephalus. Similarly cases of myelo-meningocele presenting evidence of paralysis of the sphincters or lower extremities, or of deformities, are not going to be benefitted by operative measures on the sac, as in these cases the nerve elements which should find their normal destination down in the extremities, terminate in the sac itself, and it is practically an impossibility to replace these

nerve structures into the spinal canal proper and to further their distribution to their normal site.

A consideration of these features will necessarily restrict the cases which are suitable for operation to a very small number indeed, that is to say, that operative measures should be undertaken only in cases which present no evidence of hydrocephalus, and no evidence of cord involvement in so far as paralysis or deformities are concerned. In selected cases the operative mortality can be reduced to an almost negligible figure, the greatest danger, apart from the immediate shock, being from sepsis which, through want of care, may so readily occur from soiling of the dressings by faecal or urinary discharges.

Treatment. The older methods of treatment included aspiration and injections of solutions of iodine, a favourite one being Morton's solution, which contained iodine grs. x, pot. iodide grs. xxx, to one ounce of glycerine. Under the most favourable circumstances the mortality was about 50 per cent. Resection of the sac itself is the only method by means of which one may hope to relieve the condition satisfactorily. The time of operation has been the subject of discussion for many years, some authors advocating immediate operation, that is to say within the first few days after birth, others advising no interference until the child is at least ten to twelve months old. The results of the latter show, of course, a higher percentage of recovery, as the weak and feeble cases, and those developing a hydrocephalus, have either died in the meantime or have become totally unsuited for operation. The operator is well advised to wait, if possible, till the child is well developed physically, and also that he may form a definite opinion as to the suitability of the case. One may require, however, to operate under circumstances which are not such as might be desired, as in cases where the surface of the tumour has become excoriated and where danger of leakage and subsequent infection are imminent (Case No. 1).

Case No. 1. Baby E. P., male, aged four months, third child in the family; all others normal; no history of any similar occurrences on either the father's or mother's side. The tumour mass had not increased to any appreciable degree since the time of birth and there was no evidence of undue cerebral pressure at the fontanelles. The child itself on admission to the hospital weighed ten pounds, and was not particularly well nourished, and in this respect did not appear to be a suitable case for operative interference. On the other hand, however, the greater part of the

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CASE No. 1



CASE No. 2



surface of the tumour was represented by a thin membranous structure covered with excoriations along its posterior border, which threatened to perforate the sac at almost any time. Owing to this fact, and as the tumour itself appeared to be a pure meningocele not associated with any paralysis, deformities, or other disabilities, it was decided to resect the mass at once. This was done on July 3rd, 1918, and with care the whole sac was dissected free from the skin, fascial, and muscular layers, to its point of exit from the hernial opening in the spinal canal, which the *x*-ray proved to be due to an absence of the arch over the third lumbar vertebra. The neck of the sac, which fortunately was not ruptured during the procedure, was tied off with No. 4 iodinated catgut after it was determined that no elements of the cord were involved. The remaining structures were united by two layers of catgut, and the skin closed by skin-clips, after the redundant portions had been removed.

Ether was used as an anæsthetic by intra-tracheal insufflation and proved satisfactory. During the course of the operation the hips of the child were raised some ten inches higher than the head to prevent possible sudden drainage of cerebro-spinal fluid. For the first forty-eight hours the child was kept lying on its stomach with hips elevated, being permitted to lie on its side at the expiration of that time. It made a practically uninterrupted recovery with comparatively little evidence of shock. It was kept in the hospital for three weeks for observation, at the end of which time it had gained four pounds. At the moment of writing it is enjoying excellent health, has gained steadily in weight, has shown no signs of any hydrocephalic condition, and promises to develop in a perfectly normal manner.

Case No. 2. Baby E. R., aged seven months, weight thirteen pounds, first baby in family; parents both healthy and no history of similar occurrence in either family. The mass which had not increased since birth, was about the size of an orange covered with normal skin throughout the greater part, except along its posterior border, where the covering of the sac was represented by a thin translucent membrane, a portion of which, to the extent of a fifty cent piece, appeared to be ulcerated, "weeping" a thin serous discharge. The child itself was a well developed, healthy, and well nourished boy, without showing any evidence of paralysis or other nervous disturbances so frequently associated with spina bifida. This led me to believe that the condition was a simple meningocele and on operating on July 5th, 1918, I proceeded to excise the sac

in the same way as in Case No. 1, but found that it was impossible to do so without constantly breaking into sac itself so that it was more expedient to incise directly into the sac from above downwards and lay it wide open. At the bottom of the sac, and lying in the hernial opening of the spine, was the epiconus of the cord. It had been pushed through the hernial opening and it was found practically impossible to replace it. The opening was closed by three layers of deep sutures; first a layer of fine No. 1 catgut, approximating the meningocele surfaces throughout the length of the hernial opening. Immediately above the herniated portion of the cord the lining of the sac was incised, and above this a second layer of catgut inserted into the fascial and muscular layers on either side. The redundant portion of the sac, including the skin, was now removed and a final layer of interrupted heavy catgut sutures inserted, which brought the muscular layers forming the boundary of the area involved, into apposition. The skin was closed with clips and a small dry dressing covered with oiled silk applied.

Ether was the anæsthetic used, given by the intra-tracheal insufflation method, and proved exceedingly satisfactory indeed. The same precautions in respect to the elevation of the child's hips during the course of the operation were observed as in Case No. 1. There was practically no shock and the child made an absolutely uninterrupted recovery and at the date of writing has gained five pounds, and is learning to walk.

SUMMARY

A small percentage of cases of spina bifida carefully selected with due regard to the presence of hydrocephalus (arrested), and deformities or paralysis, is suitable for operation, and offers a good prognosis. The age best suited for operation is from nine months to two years, but operative measures may be taken much earlier where ulcerative processes or danger of rupture threaten the integrity of the sac. Regard for the fact that the condition is due to increased pressure, producing a hernia, will preclude unnecessary operations on the bony structures of the spinal canal. Careful preparation of the patient, careful anæsthesia, preferably by the intra-tracheal insufflation method, and extreme care in the operative technique and after treatment, reduce the question of shock to a minimum, so that the operative mortality, *per se*, is an almost negligible quantity.

THE DIAGNOSTIC VALUE OF THE X-RAY EXAMINATION IN PULMONARY TUBERCULOSIS

BY W. A. WILKINS, M.D., C.M.

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CONSIDERABLE confusion appears to exist in the minds of the medical profession concerning the value of the x-ray examination with reference to pulmonary tuberculosis. There are several reasons for this, two of which appear to be to me important; namely, lack of skill in interpretation, and the expectation that the x-ray will tell the whole story unaided. We are accustomed to accept as final, the verdict of the x-ray examination with reference to fracture, dislocation and many other conditions, because the evidence is indisputable and of such a nature that all who run may read. Accordingly, we not unnaturally, perhaps, expect the same positiveness on all matters concerning the ills to which the flesh is heir. We do not stop to consider the pathology of disease nor the physics of x-ray light, and, in addition, we fail to appreciate that our powers of observation may be limited, or that the evidence submitted may not be in a language that all can read. Further, it may be that in the present state of our knowledge no one can read correctly all that may be on the plate. In pulmonary conditions, especially, there is need for the very greatest care in x-ray interpretation, unless, through reckless diagnosis the method be discredited. Any opprobrium which may result through faulty diagnosis should rest upon the individual and not upon the method. Comparatively few errors are due to overlooking the presence of disease, but many are made by pronouncing as tuberculosis a condition which is not tuberculosis. However, this feature is not confined to x-ray interpretation alone.

Read at the meeting of the Montreal Medico-Chirurgical Society March 15th, 1918

The first obstacle offered to an easy *x-ray* diagnosis is that nearly all chests will show some degree of pathology upon the *x-ray* plate. This is so constant that it must be accepted as a normal finding. Here is a pitfall for the inexperienced, a problem for the trained observer, and a harvest for the charlatan. The next difficulty is that the diagnosis is not always worked out in collaboration with the clinician, and even access to the valuable information contained in the clinical history sheet may be neglected. It should be emphasized that in order to obtain results, collaboration with the clinician is essential. Special study of the plate may be made of regions which give rise to physical signs, or on the other hand an explanation of certain shadows may be sought for in the physical examination. In saying this, it is not intended to convey the impression that the diagnosis of pulmonary tuberculosis is not possible by means of the *x-ray* examination alone; far from it. The greater number of cases require no further confirmation, nor for that matter, does the clinician require other aids for mere diagnosis than his own skill; but it is intended to emphasize that if it is desired to obtain the most that may be found in a case, no method of examination, including the *x-ray* should be neglected. The *x-ray* may be superfluous in some cases, but in many it will be vital. In doubtful cases it may convert a suspicion into a certainty or set at rest all doubts.

Another point is that the *x-ray* technic should be perfect for chest work. Good stereoscopic plates in the vertical position are advisable, and the fluoroscopic examination should not be omitted. Information regarding the movements of the diaphragm and the heart are obtainable only by this method.

It has been stated above that nearly all chests will show some degree of pathology, and this feature is so constant that it may be designated as the normal pathology of the chest. This consists of shadows which are seen on the plate of the individual who goes about his daily occupation without the slightest suggestion of any impairment of health. They are seen also in healthy children. These shadows are situated at the roots of the lungs, along the course of the bronchi and bronchioles, and at the points of bifurcation wherever branching of the bronchial system occurs. They are cast by the bronchial system with its accompanying lymphatics and blood-vessels, and by the lymphoid elements at the roots of the lungs and at the points of bifurcation of the bronchi and bronchioles. They are normal findings, but their visibility on the plate increases with age and with the extent to which they

are involved by pathological processes. When one considers the impurities that are constantly being inhaled, it is not surprising that the lymphatic system, associated with the respiratory tract, should almost always show some evidence of pathology, but it cannot be termed strictly an evidence of disease. Hence occupation, environment and age, apart from disease, will affect, to some extent, the degree to which these shadows are present. The structures at the roots of the lungs are of such a nature as to cast shadows always. When the areas drained by the lymphatics which filter through the glandular structures, or the glandular structures themselves are diseased, resulting in increased infiltration, then these shadows will be increased in extent and in density. Hence it is evident that an occupation or an environment which entails the inhalation of impurities, will give rise to denser and more extensive shadows in a lung which is otherwise healthy and may be regarded as normal; also, other things being equal, the presence and extent of these shadows will increase with age.

The quality of the shadow is a matter of extreme importance, varying with the age of the lesion. Old lesions are dense. In recent invasion or in an active lesion, the shadow is generally light, feathery and small in extent, and a favourite situation is in the upper portions of the lungs, either supra- or infra-clavicular. To demonstrate this, it is necessary to have good plates. There is another kind of shadow which requires mention, consisting of small more or less circular circumscribed and sharply defined shadows which may be found anywhere from the root of the lung to the periphery, and from the base to the apex. They seldom bear any relationship to physical signs or to the present state of health of the individual. Occasionally a blurring of one or more of these shadows suggests the probability of active disease, but as a rule they merely represent an old healed lesion. They are no doubt indications of old disease of some nature. If they are evidences of old tuberculosis, they are found so frequently that one is forced to the conclusion that in proportion to the number of individuals attacked, tuberculosis, after all, claims the full penalty in comparatively few, and that the majority of cases are light attacks which run a course unrecognized from invasion to recovery.

For practical purposes, I have divided cases of pulmonary tuberculosis into four groups. The first group comprises those cases in which the clinical and x-ray findings are in agreement. The second group, in which the diagnosis is based upon clinical evidence only. The third group, in which the diagnosis is based

upon *x-ray* evidence in the absence of physical signs, and the fourth group in which the disease may be present though not recognized by either the clinician or the roentgenologist.

With reference to the first group, namely, cases in which the evidences of tuberculosis are manifested by clinical examination and by the *x-ray*, this fortunately includes the greater number of cases. It is not intended to except those cases in which an original error of diagnosis has occurred by either method, an error which might have been avoided by more careful examination of the patient, or by closer study of the *x-ray* plate. This is regarded as a personal factor and should not be advanced as a triumph for one method to the discredit of the other. Advanced cases with copious signs and heavy shadows require no skill to recognize, although occasionally a case occurs which will require considerable thought for a differential diagnosis. The cases with well marked pathology seldom give rise to discussion. The only observation to be made on this group is that the *x-ray* frequently reveals a greater extent of disease than the clinician believed to be present, and that the post-mortem table would probably show greater involvement than indicated by the *x-ray*. The explanation of this difference in degree is that the deeper situated lesions cannot always be demonstrated by the clinician with the same satisfaction as the more superficial. An isolated deep seated lesion surrounded by healthy lung tissue has a better prospect of being brought out by him than have all the ramifications of extensive disease. In the chest, depth is no impediment to the *x-ray* and the entire lung, superficial or deep, diseased or healthy, will be projected on the plate. But even stereoscopically one does not obtain the same impression of extent as he does when viewing the lung cut up upon the post-mortem table. Any discrepancy in this group is likely to occur only with reference to the extent of the disease and not with the recognition of its presence, for either method alone could recognize it.

The second group, namely, cases in which the diagnosis is based upon the clinical evidence only, should be a small one. I would say further that there are many experienced roentgenologists who would not acknowledge the existence of such a group, under taking to diagnose tuberculosis always before the clinician. The cases are early ones and situated superficially. The existence of this group and its size will depend upon the determination of what are the earliest clinical signs which will warrant a diagnosis of tuberculosis, and whether or not the pathological changes are sufficiently marked to cast recognizable shadows on the *x-ray* plate.

If the pathological changes in the tissues are of such a nature that they can be recognized only by magnification, that is, with the aid of a microscope, then there is little chance of their shadows being recognized by the unaided eye. The shadows would be so faint as to escape recognition even upon the closest scrutiny.

The third group comprises cases in which the diagnosis is based upon the *x*-ray evidence in the absence of physical signs in the chest. Some clinical evidence of disease is present, such as elevation of temperature, rapid pulse or cough, and the clinician, though suspicious, is unable to locate the site of the lesion by ordinary physical examination. In these cases there are frequently evidences of disease in the lymphoid elements either at the roots of the lungs or at some point of bifurcation of the bronchial tree. I believe that lesions of this nature can be demonstrated by the *x*-ray examination, but to establish the diagnosis, requires the support of the clinician. To insist upon a diagnosis of tuberculosis in the absence of corroborative clinical evidence can bring only discredit. Theoretically the *x*-ray should reveal more than the clinician can find; practically it is not wisdom to insist upon a diagnosis based on doubtful shadows unless this diagnosis is supported by clinical evidence.

The fourth group comprises doubtful cases in which a negative opinion has been expressed by both the clinician and the roentgenologist, and in which at a later period a definite diagnosis of tuberculosis is established. In so far as our facilities exist for tracing these cases, they form a very small percentage. It may be that at the first visit the condition was too early to be recognized, or it may be that it was not present, the condition developing later. Although these cases are real problems there is little to be said concerning them, except that we are doing all we can day by day to solve them. I am of the opinion that in the present state of our knowledge very few cases are unrecognized.

To sum up, the *x*-ray examination is of undoubted value and has a well assured position among the methods of examination with reference to the diagnosis of pulmonary tuberculosis. Errors in *x*-ray diagnosis will seldom be due to lack of evidence on the plate, but to lack of skill in interpreting the evidence. There is little danger of overlooking the disease, but a great tendency to regard the "normal pathology" as an evidence of active tuberculosis. Only familiarity with the subject from all angles, and experience in reading the real meaning of these shadows will avail. In the majority of cases the diagnosis is possible from either the

clinical or the x-ray examination alone. If one desires to study a case intelligently, no source of information should be neglected. Even when access has been had to all available information, results will be sufficiently below 100 per cent. to remind us that after all we are only human. In extenuation it is submitted that no method of examination, nor combination of methods, will give rise to results 100 per cent. correct. The margin of error will grow smaller with increasing experience, but it is too much to hope that it ever will disappear entirely.

ONTARIO MEDICAL ASSOCIATION

As announced in the March number, the Ontario Medical Association will hold its thirty-ninth annual meeting at Toronto, on May 28th, 29th, and 30th. In addition to the information published in that issue we are informed, on going to press, that the Address on Medicine will be given by Sir St. Clair Thompson, of England, and that many prominent men both from Canada and the United States will participate in the meetings. Indications point to a very enlightening and successful convention.

ANATOMICAL AND BACTERIOLOGICAL FINDINGS IN THE RECENT EPIDEMIC PNEUMONIA

BY HORST OERTEL, M.D.

THE evidence presented here is from material collected at the Royal Victoria Hospital by Doctors Bruère, Crowdy, Pedley, and Gross during last October and November. I have compiled and co-ordinated their findings.

In the first place, the chart (inserted below) shows that this material consists of two parts, the anatomical and the bacteriological, and for convenience sake I will consider them separately, especially as the bacteriological includes also some clinical investigations.

We have here the findings of forty-two autopsies which were thoroughly investigated; there were several others which are not included, as they were not complete. It will be seen that the majority of the autopsies occurred amongst young individuals; furthermore, our material consisted of twenty-eight males and fourteen females, and it is of some interest to observe that there is a marked change in the type of admission, for from the 27th of September to the 15th of October, autopsies were performed on twenty-two males and one female only, the twenty-two males being mostly soldiers; while from October 15th to November 21st, there were autopsies on thirteen females and six males. This, of course, is of local interest, but it also shows, what has been borne out by experience elsewhere, that the disease is essentially one in young persons of vigorous, strong and plethoric constitutions, and this applies not only to the males, but to the females. One type of female is especially prone to infection with fatal termination, that is the pregnant woman.

I shall divide the anatomical lesions into two groups: those which represent the local manifestations, and those which represent the general infection.

From the Pathological Laboratories of the Royal Victoria Hospital and of McGill University, Montreal.

Read at the fourth meeting of the Montreal Medico-Chirurgical Society, December 20th, 1918.

First, as to the local lesions: these centre largely in the respiratory organs and I shall take them up in their natural sequence. In the first place, as far as the mouth, pharynx, the nose and the tonsils are concerned, our material shows them anatomically intact. We have been unable to find any definite lesions in them, although at times hæmorrhages were clinically reported from the nose. But as one passes down the respiratory tract, below the larynx, sometimes high up in the trachea and sometimes farther down, definite and more or less characteristic changes are met. There is almost always very marked, intense, congestion and very frequently exudative inflammation of the trachea, which in some cases goes on to the formation of a croupous membrane. There exists increasing congestion from the larynx downward; at the bifurcation of the trachea it becomes intense, and a croupous membrane covers the surface. This inflammatory condition usually extends to the bronchi and continues into the bronchioles which are the seat of variable exudative lesions. That takes us to the lungs themselves, and here it must be noted—somewhat paradoxically—that constant is the inconstancy of the lesions. By that I mean that one can find in these cases almost all the various inflammatory lesions of the lung exemplified, often combined, and they correspond very closely to the peculiar clinical manifestations in this epidemic. Some of the virulent and rapidly dying cases show only extreme congestion, the lungs are dark bluish and full. (This gave rise to the story that the disease was really typhus or plague.) Early is also massive inflammatory œdema, so that the lungs appear as if drowned, if not actually consolidated, at least firm and filled with fluid. On section, frothy fluid drips from the knife and organ. At times the inflammatory œdema was of a character to be termed serous pneumonia. There are other instances in which the lesions in the lungs correspond practically to those of the first or red stages of a lobar pneumonia, more or less irregular, though sometimes quite definitely lobar. Again there are others, especially in those that linger, in which the lung shows grey hepatization, and this may be diffuse, or it may be patchy, so that on palpation the lung is nodular to the touch. The majority of cases show, in addition to these pneumonic lesions, very definite involvement of the bronchi in the lung and these, like the lesions of the lung, vary. The bronchial mucous membrane is sometimes covered by an extremely hæmorrhagic serous exudate; then again there exists purulent bronchitis, and in some cases we have observed a productive obli-

terative bronchiolitis, that is, the formation of granulation and cicatrical tissue gradually growing into the lumen of the bronchus. In a few instances the purulent inflammation was so great that abscess formation with softening occurred in the lung. Microscopically the exudate shows as many differences as is to be expected from the gross appearances. Sometimes there is only a serous exudate, practically always, with extreme hæmorrhagic engorgement, or, massive red hepatization, then again purulent or fibrinous pneumonia in varying proportions as in ordinary lobar pneumonia, alone or interchanging with the so-called catarrhal type in which the exudate is made up of large, flat, swollen, leucocytic cells with an unusual quantity of blood. Moreover, the occurrence of multiple septic thrombi with irregular hæmorrhagic infarction of surrounding lung tissue is not infrequent. Hyaline thrombi in the interalveolar capillaries are also to be noted. In one of the cases in which the bronchi were particularly involved we found the influenza bacillus in the lining epithelial cells and in the exudate which occupied the bronchial tube. It is evident that we are dealing in this epidemic with a peculiar erratic and anatomically extremely variable disease without orderly occurrence and sequence.

At the beginning of the epidemic, whether by accident or not, it appeared to us that cases of a severer and diffuse hæmorrhagic type of pneumonia were more frequent; toward the end it appeared as if the infection had become attenuated and simpler, ordinary broncho-pneumonic types occurred.

Practically all cases showed a very marked sero-fibrinous pleurisy. The exudate was large in quantity, fluid, and the amount of fibrin great. Very frequently the fibrin formed a thick membrane on the surface of the inflamed pleura. Pericarditis was very rarely observed in this epidemic.

So much for the local manifestations. Now secondly, as to the general results of the disease. In the first place there was noticeable hæmolysis, the blood being fluid throughout, even in the heart. Even terminal clots were not seen. All the organs showed the effects of parenchymatous degeneration, or degenerative inflammation. This was most pronounced in the liver which was generally more affected than even the kidney. It was associated with icterus in a number of cases leading to distinct jaundice of the skin and conjunctivæ. In cases in which section of the brain was permitted, very marked oedema was found; the amount of fluid which escaped on opening the skull was considerable, the lepto-meninges turbid, opaque. It had all the appearances of results of an intoxication.

So much for a short review of the anatomical findings.

In the bacteriology we are on more uncertain ground. We have here two sets of investigations. Sputa of twenty-five patients were examined, and of these nineteen had definite pneumonia; in seven, certain influenza bacilli were isolated; that is, definitely hæmoglobinophylic in culture. Probable influenza bacilli were found in six instances. Of the autopsies we made bacteriological examinations in twenty cases and the influenza bacillus was definitely culturally recovered from bronchi and lungs in eleven, in none of these pure, but always in symbiosis with other micro-organisms most frequently with the pneumococcus; eight of the eleven cases were influenza plus pneumococcus infections, while in three the influenza forms were associated with other cocci. In seventeen out of the twenty bacterial examinations from autopsy, the pneumococcus in one or other strain was found. Anærobic cultivations gave no specific results.

Now this is our evidence. It seems to me impossible and premature to draw conclusions, more especially with regard to the ætiological relation which the influenza bacillus may have to these infections. We know practically very little with regard to the pathogenicity of the influenza bacillus. It is an extremely uncertain quantity. We know that it may exist even under normal conditions in the nose, mouth and throat as a saprophyte, but it also has been found frequently as a partner of mixed infections, and no one knows exactly what rôle the influenza bacillus may play in these mixed infections. For instance, it has been recovered from tuberculous cavities and one cannot say whether it lives in the tuberculous cavities as a saprophyte on dead material or as a parasite with the tubercle bacillus and others. Moreover, in the majority of cases, at least in the past, the invasion of the influenza bacillus has been found extremely limited. Up to this epidemic it has been very rare to recover it from the blood, so rare that it is generally not attempted in cultivation. Moreover, its rôle in pneumonia is also unsettled, especially how much is due to its own action and how much to that of accompanying micro-organisms. Ordinary laboratory animals have been found hardly or poorly susceptible to it, and the sterile cultures of the bacillus produce about the same effects in animals, that are susceptible at all, as those in which the bacillus itself is used. Moreover, the influenza bacillus confers only a feeble and uncertain resistance, excites too little antibody formation, so that our ordinary serological tests for infection, as agglutination by sera of infected animals, are uncertain. I am

aware that recently different statements about these points have been made, but these must be confirmed by subsequent investigations.

It is said that the strain of the present epidemic is a particularly virulent one with invasive properties, and thus differs from all those which have so far been recovered. That is possible and cannot be denied.

Some claim it possible in this epidemic to recover influenza bacilli from the blood and other organs, and that the blood agglutinates this particular strain—whether that is universal experience remains also to be seen. But there is one certain point which is interesting, and may be of importance. It was brought out prominently in this epidemic and has not, I think, been sufficiently appreciated in the ætiological relations of the influenza bacillus; that is, its symbiosis with other pathogenic organisms, especially the pneumococcus. In our own results it was never found pure, but in the majority of cases with the pneumococcus, then also with other cocci. It has been further shown by Dr. Bruère, and some others, that the influenza bacillus in culture grows better and more abundant in symbiosis with other cocci, especially the pneumococcus. This is contrary to the older experience that it occurs almost pure in influenza.

Now it is quite conceivable, from our anatomical and bacteriological findings, that persistent symbiosis of these micro-organisms may biologically modify them and, therefore, their actions and interactions, and growth of one in symbiosis with the other may enhance the virulence of both. It may also account for the peculiar inconstancy and variability of the lesions because the symbiotic balance may not always be even and may lean sometimes to one side in favour of one, and, at other times to the other side in favour of the other partner. These factors may at least in a measure be responsible for the peculiar erratic characters, the severity, the malignancy of the present epidemic. In conclusion, I personally have no doubt, that in this, as in other epidemics, certain environmental factors are probably also of importance. The unusual climatic and the nutritional conditions which on account of the war prevailed throughout the world during last autumn may have exercised an influence on the occurrence and character of the present epidemic.

All of these are not definite conclusions and they make clear only one point, viz.: that there is still much to be learned about the internal as well as external factors which enter into the occur-

rence of epidemics. Thanks are due to Mr. H. E. Webster, Superintendent of the Royal Victoria Hospital, for his co-operation in this study.

Autopsies, 42:—Age, twenty to thirty, thirty-one cases; age thirty to fifty, seven cases; age fifty to sixty-three, four cases.

Sex—Males, twenty-eight; females, fourteen.

From September 27th to October 15th, 1918—twenty-two males (mostly soldiers); one female.

From October 15th to November 21st, 1918—thirteen females, six males.

BACTERIOLOGY

(a) *Clinical*:

Sputa examined (of these, nineteen had pneumonia).....	25
Definite influenza bacillus.....	7
Probable influenza bacillus.....	6
Pneumococcus recovered (with streptococcus viridans and micrococcus catarrhalis)...	19

(b) *Autopsies*—Twenty bacteriologically examined:

Influenza bacillus, none pure.....	11
“ “ with pneumococcus.....	8
“ “ with cocci.....	3
Pneumococcus.....	17

CONSIDERABLE attention has been attracted to a new method of treating disease which has been employed very successfully at the military hospitals where it has been introduced. It consists of the use of a mineral, double nitro-peroxide, which actually extracts inflammation from the body. The salt is mixed with a starchy substance which holds its action until it is placed on the skin over the diseased bone, from which it extracts the impurities, the germs, and their poisons. The material is sprinkled on lint or gauze and when the dressings are removed six or twelve hours later, blisters will be seen on the skin. If there is no infection the salt will not affect the skin. This treatment has been introduced by Dr. F. Pridham, of Johns Hopkins Hospital, Baltimore, and is said to be particularly effective in cases of inflammation of the joints—rheumatism

SO-CALLED TRENCH MOUTH AND OTHER
MANIFESTATIONS OF VINCENT'S DISEASE
AS A SPREADING INFECTION
IN CANADA

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DURING the last two years, a number of articles have appeared in British and American medical journals bearing on Vincent's disease as it affects the mouth, pharynx and other mucous surfaces. Vincent's disease of the gums, which in the majority of cases is primary to Vincent's disease elsewhere¹ seems to have attracted but little attention prior to 1917. Since then the so-called "trench mouth" among the overseas troops has been identified as Vincent's disease, and many statistics are now available. Statistics, however, seem to be largely wanting in the United States and Canada. Greeley² states that he knows of no statistics to show the frequency of Vincent's disease in the United States.

As a result of investigation during the recent months, we have been able to ascertain that Vincent's disease is of more frequent occurrence than is generally suspected. A record of cases admitted to military throat and dental clinics and civilian dental clinics of the Toronto General Hospital is very striking. During the five months of April, May, June, July and August, 1918:

Number of cases admitted.....	38
Cases showing lesions about the gums.....	31
Cases showing lesions about the tonsils.....	15
Cases among civilians.....	16
Cases among soldiers.....	22

The total number of new cases examined in the above clinics for all diseases of the mouth and throat did not exceed eight hundred and fifty, and of this number thirty-eight, or 4.5 per cent. showed Vincent's disease. In the civilian dental clinic, of one hundred and fifty new cases admitted, 10 or 15 per cent. showed the lesion about the gums. Ten of these cases were females.

We have found that the disease is prevalent among our civilian population and among our soldiers who have not served overseas, although many cases recur in returned soldiers who have suffered from so-called trench mouth overseas; others develop for the first time after their return to Canada of men who have not suffered from affection of the mouth or throat overseas.

Several of our cases showed the lesions about the teeth and tonsils and ulcerative areas tending to spread backwards from the molar teeth. In one case of marked severity the lesions occurred as extensive sloughing ulcers on gum margins, cheeks, tonsils and tongue. The involvement of the tongue is of special interest as it is very rare. McKinstry³ states that in his large series of cases he did not find the tongue involved in any case. We have records of a case which was admitted to the Toronto General Hospital on January 3rd, 1914, suffering from an ulcerated condition of the mouth. The ulcers involved tonsils, gum margins, cheeks and right side of the tongue, where it lay up against the last molar tooth.

A diagnosis of Vincent's angina was made in this case, which was progressive, and patient died on January 23rd, 1914. Profound prostration and emaciation immediately preceded death.

In another case, which is not quoted above, we found the organisms abundant in the sputum, while no ulcerative lesions were present in the mouth or pharynx. A complete description of Vincent's disease is given by McKinstry³, Greeley², and other authors.

In our experience the diagnosis of Vincent's disease from smears is comparatively easy. We have made smears from the throats of individuals who did not show any lesion and from sloughs which so frequently occur following tonsillectomy. Although spirochaetæ and bacilli were present in a few of these smears, the microscopic picture could not well be confused with that given in Vincent's disease. The organisms common to this disease, namely, bacillus fusiformis and spirochæta macrodenis, lose the stain in Gram's method. We have found Gram's stain unsuitable for the demonstration of the spirochæte, unless special care was taken

in counterstaining. McKinstry³ gives 10 per cent. carbol fuchsin as a suitable stain, but we have found methylene blue one and one-half minutes and carbol fuchsin 10 per cent. for forty seconds to give us our best results. With this stain the fusiform bacilli show a distinct barring and the spirochæte are stained red.

By using deep serum-glucose-agar tubes containing bits of guinea pig liver and spleen, in nearly all cases we were successful in growing the bacilli, but in culture they tended to lose their curve and become less pointed. In some of our cultures we also obtained long slender forms, but we were unable to obtain definite spiral forms. Cultures were incubated for five to ten days. Gas formation and a very foul odour were present in all successful cultures.

A diagnosis of Vincent's disease cannot be made from cultures alone. Smears were made from swabs sent to us for the culture of diphtheria bacillus and fusiform bacilli, and spirochæte were found.

McKinstry³ states that the disease does not appear to be highly infectious. That the disease occurs in epidemics there can be no doubt. In the officers' mess of the 97th battalion, in the spring of 1916, one case occurred among thirty officers. This was followed by six other cases during the following six weeks. In another instance in a small boarding house, two boarders became infected from a third one who suffered from the disease. One of our cases occurred in a doctor who a short time previous to graduation was employed in a drug store. He states that the proprietor has a chronic ulcerative patch in his tonsil. He attributes his infection to using a lead pencil in common with the proprietor.

The clinical history has been given by other writers and with one or two exceptions, all our cases have followed a similar course. The following illustrates a severe yet typical case:

1. James B., admitted to hospital ward April 1st, 1918.

Complaint. Sore mouth and throat for about two months. This was so severe for past week that he was unable to take food.

Personal history. He has been an inmate in a penitentiary for four years. He smokes about seven cigarettes a day. Had syphilis five years ago.

History of illness. Two months ago his mouth felt a little sore when eating. This continued to grow worse until his mouth became so painful and his tongue so swollen that he could not eat and scarcely talk. He had not eaten anything for four days previous to admission, but slept well during the night.

Examination. Patient thirty years of age and well nourished. Appeared to have some pain; could not speak above a whisper. Teeth were badly discoloured and a few carious. There were ulcerated areas along gum margins and in mouth, especially in front of anterior pillar on right side. This condition also extended over both tonsils. The ulcers were covered with a large amount of slough and necrotic tissue. The tongue was swollen and the whole mouth appeared congested and tender. The breath was very foul.

The urine was always free from albumin. The white cell count was never above 9,500.

The Wassermann reaction was strongly positive. The temperature did not exceed 99.5°. Smears showed many typical fusiform bacilli and spirochæte.

He received treatment for Vincent's angina in form of local applications of various antiseptics. He was discharged as cured May 21st, 1918.

The severe case with involvement of tongue referred to above is worthy of special mention.

2. Mrs. G., was admitted to hospital ward about August 10th, suffering from a sloughing ulcerative condition of the mouth which was thought to be syphilitic. We were called to see the case about August 31st. The foul characteristic odour was noticeable on approaching her room. She was unable to talk. There was swelling of face, neck and tongue. Tongue protruded from her mouth which she was unable to close. She was able, however, to take liquid nourishment. A closer examination of her condition revealed extensive deep sloughing ulcers on her cheeks, lips and the tip and under surface of her tongue. These ulcers extended widely outward from the tissues in contact with the gum margins. They also extended backward from the molar teeth and spread out over both tonsils. The ulcers showed the usual characteristics of Vincent's disease. They were serpiginous in outline and did not show the punched out appearance common to syphilitic lesions. Although conforming largely to the ulcerative type of the disease, portions of the ulcers were quite superficial and resembled the diphtheroid or superficial type described by other authors³. They were covered with an extensive yellowish grey slough or pseudo-membrane and bled freely and easily when touched. This case showed an unusually large amount of slough and necrotic tissue about the lesions. The cedema of face and tenderness of neighbouring glands was also a prominent feature. Smears showed the

typical fusiform bacilli and spirochætæ, but mixed with a number of other organisms.

The Wassermann test was strongly positive. White blood cells count was 11,800. Temperature was never above 100°. Urine showed a trace of albumin.

A noticeable feature of this case, and in fact all cases of Vincent's disease, is that pain or systemic reaction is not severe; in fact, they are both out of proportion to the extent of the lesion.

Cases placed under treatment for Vincent's disease showed marked improvement and tended to clear up in about three weeks. Other cases required longer periods of treatment as illustrated by the following cases:

3. Sergeant L., applied for admission to hospital for tonsillectomy June 4th, 1918. Smears made from a deep ulcer on tonsil showed many Vincent's organisms. He was sent to the hospital for further treatment and returned to us July 18th. Smears were negative for Vincent's organisms. Tonsillectomy July 19th, was followed by an uneventful recovery.

The most satisfactory method of treatment is that in which some form of arsenic forms an essential part. Arsenic administered internally is a valuable adjunct to local treatment, but arsenic internally without the use of vigorous local treatment *will not clear up the condition*. This is well illustrated by the following cases:

4. Mary S., admitted to dental clinic May 3rd, 1918, suffering from an infection of gum margins. A diagnosis of Vincent's was made from smears and clinical features.

She had been receiving treatment for syphilis since May, 1917, in the form of mercurials and several intravenous injections of diarsenal.

The Wassermann test had been positive. When seen by us, the affection of the gum margin was gradually becoming worse.

May 3rd. Local treatment with 10 per cent. tri-chlor-acetic solution and antiseptic solutions as mouth washes was begun. May 29th the condition had entirely cleared up.

5. Miss C., admitted to dental clinic April 23rd, 1918, suffering with a Vincent's infection of gum margins. Wassermann test was negative.

She was given two intravenous injections of diarsenal along with local treatment of gum margins.

Tri-chlor-acetic 10 per cent. solution and antiseptic washes

were used in this case also; gum margins were entirely healed and smears were negative in two weeks with the above treatment.

A number of such cases came under our notice who had been receiving treatment for syphilis in the form of diarsenal intravenously without any improvement in a concurrent Vincent's disease of the mouth. Let us emphasize that a correct understanding of the nature of the disease is the all-important factor in the treatment. If the case is mistaken for syphilis, the treatment is usually insufficient to effect a cure. A positive Wassermann test, though it bears a relationship to Vincent's disease⁴ is often present, a fact that has been noticed by other writers.

Mild cases are often mistaken for pyorrhœa alveolaris² where smears have not been made, and here again the treatment may be unavailing. Dentists often advise extraction of teeth for such cases, but unless teeth are decayed, this is unnecessary. In Vincent's there are no pus pockets at the roots of the teeth, and proper treatment without extraction almost invariably effects a cure.

McKinstry³ states: "In England fusio-spirachætal affections of the mouth and tonsils scarcely appear to have received the attention they deserve, for few contributions on them can be found in our journals, whilst in some of our recently published text-books they have not yet secured a place, and in others they are dismissed as if clinical rarities." He also states that English literature on the subject is almost exclusively devoted to Vincent's angina and allied ulcerations have seldom been mentioned. His statements apply with still greater force to Canadian literature. We have been unable to find any literature bearing on the frequency of Vincent's disease in the United States or Canada. Our investigations have led us to believe that Vincent's disease of the gums is more common and more often undiagnosed than Vincent's angina, and that this is by far the most common site of the primary lesions.

Vincent's disease seems to be on the increase and affect the health of our soldiers as well as civilian population. As it is a curable and communicable disease, it is of the highest importance that it should be recognized in all its manifestation.

References:

1. TAYLOR and MCKINSTRY—*B. M. J.*, March 31st, 1917.
2. GREELEY—*Am. Jour. of the Medical Sciences*, May, 1918.
3. MCKINSTRY—*Practitioner*, July-Dec., 1917.
4. TAYLOR and MCKINSTRY—*B. M. J.*, Jan. 19th, 1918

OFFICIAL REPORT ON INFLUENZA EPIDEMIC, 1918

THE following report on the influenza epidemic by Lieutenant-Colonel H. C. Parsons, consultant, Medicine and Laboratories, has been received from the Director-General of Medical Services, Ottawa.

The reports from the various military districts cover a period from September 19th to December 12th, 1918. During this period there were an average of 61,063 troops in Canada. The total number of cases of influenza reported was 11,496 or 19.1 per cent. of the whole. Of this number, 505 were officers and 10,991 other ranks.

There were 2,208 cases of broncho-pneumonia, or 19.2 per cent. of the total number of influenzal infections. Of these 716 died. The incidence of influenza varied greatly in the different districts, from 6.9 per cent. in one to 42.4 per cent. in another, the average being 19.1 per cent. The same may be said of the incidence of pulmonary complications; they varied from 6.6 per cent. in one to 80.4 per cent. in another.

The mortality likewise varied from 15.4 per cent. to 76 per cent.

Observations as to preventative inoculation are not as yet available, so it is impossible to discuss it in relation to the above percentages.

Reports have been received from the various district laboratories as to the bacteriological and pathological findings, under the following headings:—

1. Swabs from naso-pharynx.
2. Bacteriology of the sputum in broncho-pneumonia.
3. Blood cultures.
4. Post-mortem reports.

The following figures represent the number of times each infection was present, either alone or associated with others:

(a) Swabs from naso-pharynx:

Bacillus influenzae.....	87
Streptococcus.....	136
Pneumococcus.....	136
Micrococcus catarrhalis.....	36
Staphylococcus.....	30
Bacillus of Friedlander.....	24

The findings of the different infections varied considerably in the different areas; for example, in one area the bacillus was found in one case only. At the Polish Camp, Niagara, it was not found at all in thirty-three cases. In another instance it was found alone in fifteen out of seventy cases. In another, once in twenty-five; whereas the pneumococcus and streptococcus, or both, were always in evidence.

In Military District No. 10 the streptococcus was found in almost pure cultures in one hundred and two out of one hundred and twenty-two cases; bacillus influenzae in eighteen; whereas in Military District No. 3, influenzae bacillus was developed in 94 per cent. of cases, alone in fifteen cases, and alone, or associated with others, in sixty-six out of seventy cases. Whether this divergence in result occurs from variations in technique is difficult to say, but, upon enquiry, it is found that findings were equally diverse where exactly similar culture media and technique were followed.

(b) Bacteria in sputum from cases of bronchial pneumonia showed the following:

Bacillus influenzae.....	5
Pneumococcus.....	79
Streptococcus.....	17

(c) We have a record of one hundred and fifty-six blood cultures from acute influenzal or pneumonial cases:

155 negatives.
1 streptococcus.

(d) *Cultures from the lung show:*

Bacillus influenzae.....	89
Pneumococcus.....	44
Streptococcus.....	53
Staphylococcus.....	10
Micrococci catarrhalis.....	9

As far as can be ascertained from the reports, there were three cases in which the bacillus influenza was the only infectious organism. In the rest of the cases it was found associated with pneumococcus or streptococcus, or both. Some of the reports unfortunately state in broad terms that streptococcus or pneumococcus were the predominating organisms, while bacillus influenzae was rarely seen. On one series of thirty-six cases, bacillus influenzae was found in twenty-six, but always associated with other organisms.

PNEUMOCOCCI DIFFERENTIATION

Military District No. 2.

Type I.	Type II.	Type III.	Type IV.	Negative
3	11	2	4	10

Military District No. 10.

Types I, II and IV were differentiated; the number is not stated.

POST-MORTEM REPORTS

The reports from eighty-one autopsies are available. The lung conditions were that of broncho-pneumonia or capillary bronchitis in seventy cases; lobar pneumonia in six and in five there was a combination of the two; that is, a broncho-pneumonia on the one side and lobar pneumonia on the other. The gross appearance in each condition was characteristic and does not require detailed description. When it was a lobar pneumonia, the different stages were evidenced. In broncho-pneumonia it was extensive involvement of the bronchi with a lobular distribution, of consolidation and frequently with evidence of hæmorrhage. The minute anatomy of the lung, I quote from the report of Dr. R. H. Mullin, of Military District No. 11, which agrees in the main with other reports. It is as follows:

"Microscopically, in the tissues so far examined, the lobar pneumonia appears to be the ordinary type, with all conditions usually found. There were large quantities of fibrin and polynuclear leucocytes distending the alveoli; the bronchi were also involved. In broncho-pneumonia cases the alveoli were filled and distended with red cells and polynuclear leucocytes, in some cases the distension being so great as to rupture the alveolar wall and giving the appearance of a distinct hæmorrhage. No evidence of old hæmorrhage could be found in any of the cases examined. The bronchi were invariably involved, the epithelium being almost entirely desquamated and the peribronchial tissues infiltrated with numbers of polynuclear leucocytes, the process extended outwards into the alveoli. The unaffected alveoli were considerably dilated and emphysematous, in some cases rupture of the walls having occurred.

"The spleen in most cases showed a tremendous amount of

dilation of the blood channels. In some areas, hæmorrhage had occurred in the spleen pulp. The kidneys, in the involved cases, showed a cloudy swelling in the epithelium of the tubules, with some desquamation, glomerular epithelium, and exudate in Bowman's capsules."

Infection of the pleuræ was frequent. In a few instances it was a simple fibrinous pleurisy. In a majority, a hydro or pyothorax existed. In one series of thirty-six cases, 69 per cent. had fluid in the pleural cavity in either one or both sides; in 60 per cent. it was a hydrothorax and in 19 per cent. it was a pyothorax.

The bacteriology of these cases was as follows:

Bacillus influenzæ.....	2
Pneumococcus.....	13
Streptococcus.....	23
Staphylococcus.....	8
Sterile.....	9

There was a marked distension of the right heart. The blood showed marked hæmolysis, in many cases. The heart muscle was very friable in all cases. There is no microscopical report available on the heart muscle thus far.

Acute septic spleen was found in 47 per cent. of one series and 25 per cent. of another series.

Acute diffuse nephritis was found in 16 per cent. of one series. In other reports, a marked cloudy swelling is described in all the cases.

In one case there was an acute inflammatory condition throughout the gut.

While the bacillus influenzæ is found in the throat and the sputum in the early stages of the disease, it is rarely, if ever, found alone. The pneumococcus and streptococcus are the predominating organisms. In the pulmonary complications these later organisms are most frequently found either alone or in combination as the chief infecting agents. The bacillus of influenza seems to play a less important part.

The disease is an acute general infection, the respiratory tract being the main point of attack. As a result of the infection, the other organs, kidneys, spleen and heart muscles show great degenerative or inflammatory changes.

The term influenza would appear to be incorrectly applied to the great majority of these cases.

Editorial

BULLETIN OF THE AMERICAN COLLEGE OF SURGEONS ON HOSPITAL STANDARDIZATION. THE IMPORTANCE OF CASE RECORDS

THE American College of Surgeons cannot as yet be compared with the Royal College of Surgeons of England in those things that concern tradition and dignity, which age, combined with lofty standards, brings with it. It is a lack which time will surely remedy. But in all that concerns enthusiastic seeking after efficiency, keenness and the idealism of youth, one may say that the American institution lags not behind the older one. The forelying small pamphlet, written by J. G. Bowman, Director of the College, is an admirable brochure, and bears the stamp of that ability in organization, clarity of expression, and business-like way of setting down things, for which Bowman has already become so well known. It is a plea for efficiency in the writing and the filing of case records in hospitals, and represents one part of the very effective work, which the college has taken on itself, of elevating the standards of hospitals generally. Carping critics may say that a vast number of the American hospitals need standardizing rather badly, but on the whole criticism of that sort is certainly unfair; and in any case it is abundantly clear that the hospitals of our own country would profit largely if they were willing to follow the suggestions laid down in this pamphlet.

Mr. Bowman discusses case records under the following headings: In Relation to Hospital Success; As a Test of Medical Patriotism; Case Records in Army Hospitals; Case Records for Private Patients; As a Check upon Character of

Service; Meetings of Hospital Staff; Practical Points about Case Records.

It would take too long to describe the whole article in any proper way, but we may make one or two quotations: "The hospital creates an equation which consists of service to the sick on its own part, balanced by proportionate and practical gratitude for that service on that part of the public. The next and inevitable step is that the truth of the equation be sharply tested. Rational and convincing evidence as to the hospital's service is wanted by the public, and not general or sentimental optimism. . . . In some practical fashion it must account for efficient performance in every department. . . . How shall the hospital make this accounting? Well, results are what count, and the results are to be found in case records. The first practical reason for the keeping of case records is that these records are a pledge of loyalty of service on the part of the hospital to its community. . . . Emphasis has been placed upon case records as a test of medical honesty, or let us call it medical patriotism. A second and quite as significant a reason for these records lies in their use to prevent or minimize errors in all clinical practice; to serve as a direct test of efficiency." He goes on to argue in a most convincing way why there should be regular meetings of hospital staff. The argument needs no labouring, but Mr. Bowman's way of putting it is very apt and convincing. Meetings of the staff foster self criticism and discourage malicious criticism. They keep up *esprit de corps*; they eliminate a great deal of incompetency, negligence, or laziness, they help to inspire the internes and younger men, and they increase the sum of knowledge of the staff generally. It is hardly necessary to go on and describe in detail the various points set down for practical case record keeping. Suffice it to say that they are all pointed and practical. If this pamphlet could be in the hands of every house surgeon, we have no doubt that medical science would advance more rapidly than in the past.

A FEDERAL DEPARTMENT OF HEALTH

THE two great objects which this Association has struggled to accomplish have both been realized within the space of a few years. There seemed to be endless difficulties in the way of having Dominion registration for the profession, but this has been accomplished and already we have a large number who have qualified.

The speech from the throne at the opening of the present session has notified the country that the government is pledged to form a Department of Health. The details have not been announced, so naturally there is a good deal of speculation as to how seriously the important matter of health is to be treated. The older members of the Association fear that little will be done. They have brought this matter to the attention of the legislature for so long with little or no result, that they are not optimistic about the subject receiving the attention it deserves.

From all accounts the military must be given the credit of bringing the facts before the government that have resulted in this innovation. They have accomplished more by placing the venereal question before the public than the Association has from its numerous resolutions and occasional delegations.

The public, both here and in the United States, were dumb-founded at the statistics put before it of the number of men infected with these diseases. That the soldiers were actually freer from these troubles than the recruits could hardly be believed at first, but alas, it was but too true. To this fact much of the awakening in health matters is due.

In the field of venereal disease alone, there is considerable work that the federal government should be responsible for. Thousands of our soldiers have been infected with syphilis while on service. While the government cannot in anyway

be held responsible for this fact, yet it is to their advantage to make sure that these men have been entirely cured. They have all been treated under a system standardized by the military authorities. While the treatment seems to be adequate to many who have studied this subject, yet many others rightly claim that these men must be under observation for a prolonged period. The rapid demobilization, now going on, has already set loose a large number of them. There is great danger that they will spread this disease broadcast in the country districts which heretofore have been free from it. This phase of the venereal problem should be handled entirely by the federal authorities.

Owing to the lax inspection of immigrants the provinces have had unloaded on them an enormous number of mental degenerates. These have filled their jails and asylums and flooded the country with mentally deficient children.

The legacy that Manitoba has been left in this connection has just been partially disclosed to it. The provinces may well look to the federal authorities for assistance in this problem and for a radical change in the methods of selecting immigrants.

There are always difficulties in the way of the federal government doing work along similar lines to the provinces. This has been especially noticeable as regards agriculture. If there is necessity for dual work in this basic industry is it not much more necessary to conserve the health of the people concerned? All diseases which afflict people able to travel and to spread the infection from province to province must be of interest to the central authority. It is not just that the provinces, who adequately protect the health of their people, should have the diseased of a neighbouring province thrust on them without compensation from some quarter. This can only be prevented by adequate assistance and representations to the provinces concerned.

It is not desirable that the health work of the central and provincial authorities should overlap, as it will surely

do unless the proper men are put in charge of the work in Ottawa. There are many specially trained officers in the Medical Corps who have shown great aptitude in health work. These should be picked, not from their rank, but entirely from the initiative shown and original work done while overseas.

The recent appropriation of twenty-five million dollars for housing purposes brings the federal government in contact with this important health matter. Much good may be accomplished if this subject is gone into more thoroughly and funds provided for finding a solution of the slum question as it affects our cities.

Lack of space forbids even touching on many other problems that are extremely urgent and the responsibility for which may well be placed on a central authority in Ottawa.

HOUSE OF COMMONS MEDICAL COMMITTEE

A MEDICAL committee has been formed in England to include all medical members and other members of the House of Commons interested in scientific matters. All medical members except the Ministers have joined this committee under the chairmanship of the distinguished surgeon, Sir Watson Cheyne. The objects of the committee are to exchange opinions so as to secure representation of agreed views on medical subjects in Parliament. The committee is open to receive representations on all such matters from the colleges and corporations, and from societies and associations, and will hold conferences when considered desirable. It will not allow itself to be identified with anyone particular body.

While the need for similar action is not at present as acute in Canada as in England, yet it would be an excellent idea for the medical men in the federal and provincial parliaments to adopt a similar course. The exploiting of the medical

profession to secure votes has not yet been begun in Canada, but this will start sooner or later—probably sooner than most doctors imagine. The profession in England was caught unprepared so had to quickly succumb when they received the ultimatum from the government in the form of the Insurance Act and more recently in Dr. Addison's new bill outlining the duties of the Ministry of Health.

Medical members of Parliament must primarily represent their constituencies but there is no reason why they should not secondarily be united to uphold the best interests of the profession. This would be the most effective way of dealing with the quack healers and partially-trained pseudo-specialists who are continually asking for special legislation for themselves.

THE FREE PUBLIC HOSPITAL MOVEMENT

A VERY strong movement for free public hospitals, especially for the rural districts, has been sweeping the West. There has been an increasing demand that provincial governments assume a greater measure of responsibility for public health. This has, no doubt, been brought about by what has been accomplished by the military medical departments. It is urged that if a complete medical and hospital service can so improve conditions among the soldiers, an equally complete service for civilians would have the same result.

Each of the prairie provinces, in response to this agitation, has enacted legislation. Saskatchewan and Alberta have passed Hospital acts providing for public hospitals to be controlled and financed by the taxpayers of the districts which they serve. The Alberta act is considered the most advanced measure enacted anywhere in Canada. It recognizes more fully than the Saskatchewan act the primary responsibility of the government, and provides a scheme of organization closely paralleling that for education, in which the government assumes the initiative in all organizations.

The Alberta act lays the foundation for a system of hospitals as complete and gratuitous as the public schools. It is based on the principle of the direct responsibility of the state for maintaining the health of each and every citizen. The office of minister of municipal affairs is combined with health matters. Alberta has paved the way for a revolution of the present methods of safe-guarding health; it provides the minister of health with adequate machinery to carry out a progressive democratic policy for complete nationalization of health within the boundaries of the province.

The act provides for alternate initiative by the minister and the ratepayers. This prevents action by the government before the ratepayers of a given district are ready for action, but gives the minister full general supervision over the administration by the local boards of each district. The minister establishes the districts; the ratepayers, by petition, set the machinery of the act in motion; the district board then assumes the executive, establishing a hospital having the benefit of provincial architects, provincial medical staff to advise them as to plans, costs, etc., and the scheme is submitted to the minister before being submitted to the ratepayers. Individual ratepayers have access to the Board of Public Utility Commissioners for redress for a wronged minority. These commissioners also adjudicate on disputes as to site when the various sections of the district fail to agree. Formerly many municipalities had endeavoured to combine by mutual agreement to form hospital districts, but, with the exception of Lloydminster, the plan failed owing to dispute over sites, the inertia of one municipal council or the hostility of another. By the present act it is believed Alberta will be much better served, as many local improvement districts would have been left isolated owing to financial inability to participate in the organization of the district to which it naturally belonged. The Alberta act differs from the Saskatchewan act in that the latter does not provide for such extensive government initiative. While

the Saskatchewan act permits municipalities to unite to form hospital districts, the Alberta act provides that the government shall lay out suitable districts without regard for municipal boundaries and having regard only for the necessities of the hospital. It is designed to enable the government to progress in line with the progress of public opinion, and it leaves to public or voluntary initiative only as much as is absolutely necessary to preserve local autonomy.

THE British doctors are organizing a union to safeguard the interests of the profession. According to recent press despatches, in view of the impending establishment of the Ministry of Health and its consequent effect on the medical profession, a mass meeting of London physicians, both men and women, was held, and by a vote of 207 to 30 passed a resolution favouring the immediate organization of the profession on a trade union basis. As the meeting was distinctly representative of the profession, the formation of a Medical Union is looked for immediately. Twenty thousand members are expected to join the union. An amendment urging that the Medical Union join the Trade Union Congress, which has become regularly affiliated with the Labour party, was rejected by a large majority.

A BILL, under study to allow the legal practice of Osteopathy, and recently submitted to the Quebec Legislature, has been thrown out in committee. The stand taken by the medical profession was that osteopaths should qualify under the same conditions necessary to all specialists to obtain legal recognition.

The Association

THE QUEBEC MEETING

PREPARATIONS for the annual meeting of the Association in Quebec, June 25th, 26th, and 27th, are being carried on energetically, and everything points to a most successful gathering.

We have been most fortunate in obtaining the consent of Dr. J. Halpenny, of Winnipeg, to give the Address in Surgery. Dr. Halpenny's work is well known to the profession in Canada and elsewhere, and we feel certain that this announcement will be received with enthusiasm by our readers.

The Addresses in Medicine and Public Health will be given by leading members of the profession.

A goodly number of papers have been secured for the different sections. Those who will contribute include, for the medical section, Dr. Christian, of Boston; Drs. H. B. Anderson, Malcolm McCullough, and Fletcher McPhedran, of Toronto; Dr. James Third, of Kingston; Drs. Finley, Hamilton, Gordon, G. G. Campbell, Meakins, and Cushing, of Montreal. For the surgical section: Dr. E. L. Garner, Fernie, B.C.; and Drs. Armstrong, Garrow, Eberts, Powell, Turner, and Gurd, of Montreal. Although we cannot yet announce the names of the contributors to the section of obstetrics and gynæcology, the fact that Dr. W. W. Chipman, of Montreal, is looking after the welfare of that section, is a guarantee that there will be plenty of good material. Dr. Pagé, of Quebec, is chairman of the section of public health and is getting together a most interesting programme.

We would like again to urge our members to forward without delay to the General Secretary, 836 University Street, Montreal, the title of any paper they wish to contribute, as it is intended to publish a more detailed programme in our next issue

Obituary

LIEUTENANT-COLONEL WILLIAM JOHN OGILVIE MALLOCH, C.A.M.C.

LIEUTENANT-COLONEL WILLIAM J. O. MALLOCH, C.A.M.C., passed away at his home in Toronto, February 18th, having contracted pneumonia only ten days after his return home, to which he finally succumbed.

Colonel Malloch was born in Clinton, Ontario, about forty-seven years ago, of Scottish parentage. At the age of sixteen he entered the University of Toronto, graduating in arts in 1892 and in medicine in 1896. He was devoted to research work, particularly in anatomy and physiology, and in 1905 went to England where he took a fellowship in the Royal College of Surgeons in the following year. In 1908 he was appointed assistant surgeon on the staff of the General Hospital, and at the same time was appointed to the teaching staff of the Toronto University. In 1915, Colonel Malloch left for England with the University Base Hospital, No. 4; this unit was ordered to Saloniki, and from thence he was attached for a time to a British casualty station up the line in the Serbian army. He returned to England some time before his unit and was attached as chief surgeon to the Ontario Government Hospital at Orpington. When the University Base Hospital returned from Saloniki it was stationed at Basingstoke and Colonel Malloch rejoined his unit, where he remained as Surgeon in charge until he returned to Toronto.

Colonel Malloch was a Presbyterian, a member of the Masonic order, and of the University and Albany Clubs. The funeral took place with full military honours, the Faculty of Medicine attending in a body. He is survived by his wife.

Colonel Malloch was a man universally beloved, specially endowed with scholarly gifts, both in his profession and other branches of learning. He was recognized as a most astute diagnostician. His eminence as a surgeon was also widely recognized. He always took a great interest in athletics, and was devoted to

manly sports of all kinds. He was a man who had the somewhat unique gift of making friends and his kindly and genial nature responded to every call made upon him, either professionally or in a personal way. To those in trouble he always showed his great heart, and to the poor he gave his best services.

DR. HENRY MONTGOMERY

By the death of Dr. Henry Montgomery, which occurred at Painesville, Ohio, on February 21st, the University of Toronto loses a distinguished alumnus and a former member of its staff. To his degree of B.A., in 1876 and of M.A. in 1877, he added that of B.Sc. at Victoria in 1880, with those of Ph.B. in 1887 and Ph.D. in 1903 at the Wesleyan University, Illinois. Going to the United States he was for ten years a professor successively in the University of North Dakota and the University of Utah. In 1894, he returned to Toronto as head of the scientific department of Trinity University, transferring to the University of Toronto on Trinity's federation with that university. He held the responsible position of curator of the scientific collections till 1912, when he retired. Before so doing he helped to design and plan the Museum building. He was a charter member of the American Association for the Advancement of Science and the American Association of Museums. His publications, which were numerous, related to mineralogy, geology and archæology. He did very valuable work in the way of opening up some of the earth mounds in Manitoba, not to speak of similar operations in Ontario and in several States of the Union. He was recognized as an expert on mining properties.

For the last three years Dr. Montgomery had been living in Painesville, Ohio, to be near his relations, as his health, which had never been robust, was far from satisfactory. Even so, he busied himself with efforts to counteract German propaganda, a line of activity he was well fitted to pursue successfully. From an attack of pneumonia, from which he suffered a year ago, he never completely recovered. He is survived by one son.

DR. HENRY CHIPMAN

DR. HENRY CHIPMAN, of Grand Pré, a leader and worker in every good cause, a personal force in every movement that tended to the betterment of the community, died on January 18th, in his seventy-fifth year. He began his medical practice at Grand Pré where, for nearly half a century, he has laboured, sparing

neither time nor strength, in the interests of the people who loved him devotedly. Since the outbreak of influenza in the early autumn he had been kept continually busy, with little chance to think of his personal comfort or safety. To a man of his years the work was too strenuous; five days before his death he was compelled to give up, worn out in the service of others. Pneumonia developed, and then the end came.

Dr. Chipman was the son of the late W. H. Chipman, M.P., and was born at the old homestead, Chipman Corner, near Kentville, on November 25th, 1844. He went to King's for his arts course, but received his medical degree at Harvard University, the late Dr. Oliver Wendell Holmes being one of the professors of whom he often spoke with highest admiration. When Dr. Chipman began his practice at Grand Pré, which became his life work, his constituency was a wide one, extending from Hantsport to Wolfville, east and west, and miles of surrounding country. Often through blinding sleet and driving storm were his ministrations carried on. Though indefatigable as a medical practitioner he was more than a physician, the trusted friend and adviser of all who needed him. He was prominent in every interest in the community, the Church, the Societies, the King's County Temperance Alliance, all received his unwavering support.

At his funeral the church was filled to the doors; the service being conducted by the pastors of neighbouring districts anxious to show their appreciation of his splendid character. The choir was composed of male voices, representatives of different sections of his field of practice. Dr. Chipman leaves a widow, and a surviving son and daughter to whom the deepest sympathy is extended throughout the entire valley. The influence of his kindly, unselfish, beautiful life will last for many a long day in the community.

DR. PATRICK ROBERTSON INCHES

ONE of St. John's best known physicians passed away recently in the person of Dr. P. Robertson Inches; he was eighty-four years of age and had had a long and honourable career. Although born and educated in the province, he studied at the New York University in 1866; he then became resident physician in the Maternity Hospital, Edinburgh, 1867, and M.R.C.S., London, 1868. He also took courses and degrees from Rome, Paris and Vienna.

He leaves two daughters and four sons, three of whom have enlisted in the Canadian army and seen service overseas.

DR. H. A. MIGNAULT, a veteran physician of the Province of Quebec, died recently in his eightieth year. He graduated at McGill University in 1858. He was a visitor of the Hotel Dieu, Montreal, for many years and also one of the leaders of the Provincial Board of Health.

DR. C. J. GOSSIP died at Halifax, on February 13th, at the age of eighty-two. He was very well known and esteemed both as practitioner and citizen; he practised at Dartmouth for twenty years. He spent the latter part of his life in Halifax being connected with the Halifax Dispensary, to which institution he rendered valuable service.

DR. JAMES B. AUSTON died on January 12th, at the age of thirty-five. He graduated in medicine from McGill University in 1906. While working overtime, caring for his influenza patients, he had a bad fall on his own doorstep; pneumonia soon developed and he died after a short illness.

THE death of Dr. Louis Edouard Desjardins, eye specialist, occurred recently, after a long illness. He was in his eighty-second year. He was born in Terrebonne in 1837, and took his medical course at Victoria College, afterwards studying in London and Paris. Later he became a professor at his alma mater and Laval.

IN the death of Dr. Samuel Wesley Burns, one of the oldest and best known physicians in Nova Scotia, Shelburne sustains a severe loss, where he has been in continuous and successful practice since 1864, save for a few years spent in Milton, Queen's County. Dr. Burns was eighty-two years of age.

Miscellany

News

THE WESTERN PROVINCES

A SERIES of public meetings have been planned throughout the various school districts to supplement the work of the public health nurse, to arouse interest in this important activity in citizens and officials alike, and to spread the leaven of health education. The history of the new venture is brief, the movement having begun in 1916 with four nurses, which number was increased in 1917 to ten or twelve, and in 1918 to about eighteen. Fifty would be needed to properly cover the ground. Under the Board of Health this year seventeen nurses are working as follows: Two in Assiniboia, two in Brandon, two in Dauphin, one for the town and one for the rural municipality, two in Portage la Prairie, one town again and one rural; one in Westbourne, one for Carman, Dufferin and Roland together, with a French-speaking assistant, one for the combined municipalities of Macdonald and Grey, one at Roblin, one at Rockwood, three in training and one public service nurse at Minitonas.

The public health nurse does no actual nursing except to give first aid. The public service nurse does visiting nursing, like that of the Margaret Scott nurses in Winnipeg, over an area of some twenty miles. The provincial government, the municipality and the school districts each pay one-third of the salary of these nurses. Thirty or forty schools come under their inspection in addition to numerous home visits which have to be paid. The aim is to secure for every school child an examination to determine physical fitness and, whenever that is lacking, to suggest to parent and child means to achieve it. The work of education goes on constantly and incidentally between school and home as a consequence of these visits; an Honour Club is established among the children not to keep any sickness a secret; the mothers are helped with hints about safe-guarding young life, and prevention and the golden rule of quarantine are taught effectively.

The request for a public health nurse must come from a municipality and is usually preceded by a scout who has been doing educative and illustrative work. A "scout" is a nurse not located in any permanent field, but one who gathers information, gives it, and brings to widely scattered parts of the province such a knowledge of the character of the nurse's work that the people frequently desire a nurse for a more definite period.

DR. STUART M. FRASER, provincial health officer, has announced that next spring he intends having the compulsory vaccination law existent in Manitoba rigorously enforced. He anticipated no immediate danger from a new epidemic, but said it was part of the department's spring plan of campaign to see that every individual in the province was as adequately safe-guarded against this disease as science made possible

A HOME for the deaf and dumb, to cost approximately \$500,000, has been decided on by the Manitoba Government and was recently announced by Hon. George A. Grierson, minister of public works. The Home will be located in Winnipeg or closely adjacent to the city. The government has adopted a unique plan to secure the most efficient and up-to-date building. Five leading architects, have been asked to supply plans, in which will be embodied the latest ideas for deaf and dumb institutions. These five plans will be purchased outright by the government and the best ideas adopted.

THE provincial government of Alberta has undertaken to provide proper medical and nursing care for unorganized fringes of settlement which it is impossible to organize into hospital districts for some time to come, and has set apart \$25,000 to settle returned army medical men, or other doctors, in these places, and to pay them bonuses which will enable them to carry on; they also gave a grant of \$5,000 to the Victorian Order of Nurses this year. The purpose of the grant was to enable the Order to pursue its work over a larger area. The foregoing announcements were made by the Hon. J. G. MacKay before the convention of the Alberta Association of Local Improvement Districts and Rural Municipalities. He also held up before the convention the ideal of the public school free system for hospitals as well as schools, and urged them to approach this as nearly as possible in their local schemes. He outlined proposed amendments to the

Hospital Act, which will be brought up before the legislature this session, bringing cities under the act and so linking up the larger city hospital facilities. He referred to boundary disputes and said the department proposed to effect drastic readjustments in Mannville and Drumheller to satisfy dissatisfied townships. In future no boundaries would be approved until the minister's advisers had gone thoroughly over the territory and canvassed every township. Referring to the problem of tuberculosis, he said that the provision of sanitariums would be costly, but the government had made a start in the Bowness institution. To give proper care to the feeble-minded, such as was being done in certain states, would require an initial outlay of half a million dollars. The health estimates of the province would shortly have to be increased to ten times the present sum for general work. Mr. MacKay summarized the work in the influenza epidemic and congratulated local agents on their success. The government, he announced, had agreed to pay the city of Medicine Hat for the care of 232 country cases. That city had taken care of 484 cases at a cost of \$20,000. He estimated that the total cost of the influenza epidemic to the government would be about \$70,000.

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ALBERTA will have the additional accommodation it asked for at the sanitarium to be built by the Dominion and Provincial governments near Calgary. A telegram to this effect has been received from Sir James Lougheed, at Ottawa, stating that the federal government would grant the extra appropriation of \$60,000 which would be necessary to build an addition providing room for another seventy-five civilian patients. The total expenditure will be \$460,000, of which the Dominion government will pay \$260,000, and the province, \$200,000, the entire plant to become the latter's property after five years.

IN the budget speech in the Legislative Assembly at Regina, the Hon. C. A. Dunning outlined certain provisions. He advocated an expenditure of \$6,728,000 on capital account. Among the principal items are \$100,000 to commence a war memorial building at Regina; \$250,000 for a hospital for the insane to be located at some point in the southern part of the province; \$155,000 for additional buildings at the provincial hospital at Battleford.

PRINCE ALBERT has adopted a resolution favouring the appointment of community doctors and nurses, and is asking other

municipal bodies to join with it in a petition to the legislature in connection with the project. The recent influenza epidemic experience has led to the conviction that such a system is imperative in this country.

THE Saskatchewan act respecting hospitals was amended during a recent session of the legislature in several important particulars, although the main provisions of the original act are retained in the present measure. Such amendments as were introduced were either suggested by the light of experience during the past year, or as the result of recommendations made by the municipalities concerned.

The old act stated that any two or more municipalities might co-operate in the establishment and maintenance of hospitals, a provision which made it possible for a small village and a rural municipality to undertake this burden. The amended act specifically states "that any two or more rural municipalities may co-operate with any number of urban municipalities" for such purpose, and is doubtless an improvement. The hospital board, having been appointed by the various councils, the amended act sets forth very clearly the duties and responsibilities of this board, together with the method of appointment and tenure of office by its members. As in the original measure, the amended act makes provision for a levy up to two mills on the dollar for hospital purposes.

DR. M. M. SEYMOUR, provincial commissioner of public health, in a statement issued recently at Regina warned the people of Saskatchewan to inoculate themselves against typhoid germs; he declared that every precaution should be taken to prevent an epidemic of typhoid fever; the surest preventative was inoculation with typhoid vaccine. This is provided free of charge to the physicians throughout Saskatchewan. Dr. Seymour pointed out that this measure had proved so successful in the army the civil population might well emulate the example so forcibly demonstrated lately among the soldiers. He quoted the vital statistics for the month of November and the deaths occurring from typhoid fever and added that with the advent of a large number of strangers to Saskatchewan there was more or less likelihood of the spread of typhoid germs.

THE final passage of the bill providing for the prevention and

control of venereal diseases resulted at the evening session of the Saskatchewan legislature, January 30th. A suggestion of the relaxation of some of the more stringent clauses, for the benefit of residents of the outlying portions of the province where medical assistance is unobtainable, did not meet with the approval of the assembly.

As a result of Dr. Robert Oliver's trip to the Delta District for the purpose of inspection, an Order-in-Council was passed by the provincial executive invoking the Spanish influenza inhibitory regulations for the second time during three months. After a quiescent period Dr. Oliver states that the epidemic has broken out afresh and has already reached alarming proportions. The medical health officer had recommended the reopening of the emergency hospital, but the municipal board of health had to abandon the proposal on account of its inability to obtain a nursing staff.

DR. KNOX, the medical health officer of the Kelowna district states that he has received an advice from the provincial board of health that smallpox is occurring on the Atlantic coast and at some of the southern ports on the Pacific coast, twenty-seven cases having been reported in Seattle. In view of the possibility of the disease appearing in British Columbia, the board earnestly recommends all precautionary measures being taken, especially with regard to children. Dr. Knox says vaccination should at once be attended to by the family physician; more especially as the province is a seaboard and at the end of the transcontinental roads, which makes it peculiarly exposed to the danger of the importation of the disease.

FIGURES compiled by the provincial Department of Health show that the influenza epidemic in British Columbia claimed 2,014 during the months of October, November and December. This total has been increased since the beginning of the year owing to the recurrence of the epidemic, but as the returns are submitted by the registrars monthly, there are no figures available, except those up to the end of December. The figures given do not include any deaths that were not certified to as from "influenza" or "pneumonia following influenza". Other forms of pneumonia are not included. The returns were made out according to the registration districts into which the province is divided—Victoria,

Nanaimo, Vancouver, New Westminster, Ashcroft, Fairview, Alberni, Beaton. The percentage which the deaths from influenza, or from pneumonia following influenza, bore to the total deaths from all causes was 43.05.

At the recent annual meeting of the Vancouver General Hospital, the report presented by the superintendent, Dr. M. T. MacEachren, announced a total of 13,375 patients treated during the past year. There were 887 deaths, a death rate of 6.3, which was not regarded as high when the high rate from influenza was considered. On one day alone, October 25th, 1,304 patients were undergoing treatment at the institution.

THE report of the annual meeting of the Chilliwack Hospital showed the year 1918 to have improved upon 1917, which held the record for activity. The comparison shows the number of hospital days last year to have been 4,244 as against 3,694; and the income of 1917 \$9,181.04 was increased in 1918 to \$10,861.63. Extensive additions are to be made to the Esquimalt Military Hospital. It is planned to double the accommodation to include 260 more patients; the hydro-therapeutic establishment is to be greatly enlarged, and to the right and left two large ward buildings are to be erected capable of containing upwards of ninety beds. A new heating system is being installed.

ARMY MEDICAL SERVICES

THE Distinguished Service Order has been awarded to Lieutenant-Colonel Stanley Paulin, C.A.M.C.; and to Major Orvill Ellicette (Dental), C.A.M.C.

THE Bar to the Military Cross has been awarded to Captain Franklin Dunham, C.A.M.C.; Captain L. Palmer, C.A.M.C.; Captain Joseph Shaw, C.A.M.C.; and Captain Donald Turnbull, C.A.M.C.

NURSING SISTER HELEN McMURRICH has received the decoration of the Croix de Guerre, with star. She was attached to the Montreal General Hospital before she went to France in 1914 as nursing sister with the French army.

MAJOR BREFNEY O'REILLY, C.A.M.C., has been awarded the

decoration of the Order of the British Empire. Dr. O'Reilly joined the staff of the Military Hospitals Commissions in Toronto in December, 1915, with the rank of lieutenant; he was promoted to the rank of captain in 1916, and major in 1918. He was attached to the Royal Flying Corps in 1917 and became senior M.O. of the corps in 1918.

A HOSPITAL is to be erected by the English-speaking Catholics of Montreal in memory of those who made the supreme sacrifice in the great war. It will be conducted by the English Sisters of the Hotel Dieu, and will, it is estimated, cost within the neighbourhood of \$500,000. Although no publicity has, as yet, been given the movement, \$50,000 has already been subscribed.

THE Canadian Red Cross Society is applying to Parliament for an amendment of its Charter, whereby it will be permitted to extend its work in the case of national calamity, epidemic and emergencies in time of peace. In addition the government has asked the society to undertake special work in connection with soldiers' dependents now returning to Canada, and to continue this work during the period of demobilization.

Appointments (Canada):—Major Thomas Lowell Butters is detailed to perform the duties, temporarily, of D.A.D.M.S., military district No. 2.

Major (acting Lieutenant-Colonel) William George Turner is posted for duty as Officer in Charge, Orthopædic Surgery, in Ste. Anne de Bellevue Military Hospital.

Captain Andrew Pritchard McKinnon is posted for duty under the A.D.M.S., military district No. 10.

Lieutenant-Colonel Edward Cooper Cole is posted for duty as Officer Commanding Convalescent Hospital, military district No. 2.

Lieutenant-Colonel Ethelbert Browne Hardy, D.S.O., is posted for duty as Officer Commanding St. Andrew's Military Hospital, vice Major T. D. Archibald.

Major Benjamin Leslie Guyatt is posted for duty as Officer Commanding Base Hospital, Toronto, vice Lieutenant-Colonel E. B. Hardy.

Major John George Brown to be Lieutenant-Colonel while employed as Officer in Charge of Medicine, Ste. Anne de Bellevue Military Hospital.

Captain Roswell Park is posted for duty under the A.D.M.S., military district No. 4, from military district No. 2.

Captain (acting Major) Hamish Henry McIntosh is posted for duty as Officer in Charge of X-ray work at the Esquimalt Military Hospital, and to retain the acting rank of Major whilst so employed.

Captain Herbert Leo Sims (A.M.C.) is posted for duty at the Water Street Hospital, Ottawa.

Captain Roy Hindley Thomas, M.C., is posted for duty under the A.D.M.S., military district No. 2.

Major George Greer is posted for duty in the office of the Director-General of Medical Services, Ottawa.

Lieutenant-Colonel John Morris Nettleton is posted for duty as acting A.D.M.S., military district No. 12.

Promotions:—Captain Robert Hugh Arthur, to be Major.

Lieutenant Jacob Rosenbaum, to be Captain.

To be acting Lieutenant-Colonels:—Majors, Charles McMane, John William McIntosh, Charles Woollard, Angus William McPherson, Harold E. Ridewood.

To be acting Majors:—Captains Michael James Carney, Almon Andrew Fletcher, Samuel Ross deL. Hewitt, George Alexander Campbell, John Henry Birch, Edward Kirkpatrick McLellan, John Johnston, Alfred Chatwin Scott, Daniel Rolston Dunlop, George H. Manchester, George Chester Lawson, Seymour Traynor, Thomas Albert Watterson, Thomas John Simpson, Gerald Shaw Williams, George Arlington Brown, Charles E. McMeahan, Ernest Fielen Nivin, John V. Williams, M.C., William Baillie, Harry Morell, Gordon Wilson Armstrong, D.S.O., Horatio Fitzroy Chisholm.

To be Captains:—Lieutenants Evelyn Edwin Robbins, William John Cochrane, Floyd Cecil Stewart.

Returned from Overseas:—Captain Thomas Alphonsus Lebetter, Captain T. W. Walker, Captain P. H. McNulty, Captain Edwin James Ferg, Captain A. H. Wallace, Captain L. A. Roy, Honorary Lieutenant-Colonel D. Law, Captain John Neil MacLean, Captain H. MacDonald, Captain Andrew Pritchard McKinnon, Captain Thomas C. Campbell, Captain Edward Hiram Freeman, Major Herbert Alger, Captain George Frederick Laing, Lieutenant-Colonel David Alexander Whitton, Major Herbert William Wadge, Captain Emmet Andrew McCusker, Lieutenant-

Colonel W. J. O. Malloch, Major Robert Frederick Flegg, Major Frederick George Logie, Major H. L. Jackes, Captain D. S. Johnstone, Captain W. Goldie, Captain Esau A. Greenspon, Major George G. Greer, Captain C. F. Dunfield, Major S. M. Fisher, Captain E. C. Whitehouse, Major Thomas Logan Towers, Colonel H. R. Gasgrain, Major C. A. McDiarmid.

CASUALTIES

Died on Active Service:

NURSING SISTER A. E. DUSSAULT, Montreal.
NURSING SISTER M. K. FOLLETT, Wards Brook, Nova Scotia.
CAPTAIN T. A. GIRLING, C.A.M.C., Victoria, British Columbia.
CAPTAIN W. T. HACKETT, C.A.M.C., Winnipeg.
CAPTAIN A. V. LEONARD, C.A.M.C., Toronto.
LIEUTENANT-COLONEL T. H. MACDONALD, C.A.M.C., Antigonish, Nova Scotia.
TEMPORARY-COLONEL W. J. O. MALLOCH, C.A.M.C., Toronto.
NURSING SISTER J. M. MCDIARMID, Ashton, Ontario.
NURSING SISTER RENA MCLEAN, Souris, Prince Edward Island.
NURSING SISTER M. B. SAMPSON, Duntroon, Ontario.
NURSING SISTER A. I. STAMERS, St. John, New Brunswick.
NURSING SISTER J. TEMPLEMAN, Ottawa.

WELFARE workers have under consideration the project of uniting all charitable organizations in one federation and carrying on their work through an appeal, once a year, for financial aid to hospitals and charitable institutions, which, on this footing, they believe would receive a better support. Last year, the president of the Rotary Club conferred with the Board of Control and the Social Service Commission in regard to the adoption of the plan, but nothing definite has yet been decided. American cities, in increasing numbers, are adopting this means of carrying on charitable work. Close co-operation, the prevention of overlapping, and the elimination of a number of appeals on behalf of various institutions are avoided under the plan, and the fact that an individual charity is a member of the federation is a guarantee that the institution is carrying on a definite work.

Book Reviews

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE. By J. J. R. MACLEOD, M.B., assisted by ROY G. PEARCE, B.A., M.D., and others. Price, \$7.50. 903 pages with 233 illustrations, including 11 plates in colours. Publishers: C. V. Mosby Company, St. Louis, 1918.

With the publication of "Physiology and Biochemistry in Modern Medicine" (MacLeod) we have the appearance of a book with a new point of view—a point of view which recognizes the gap that has existed between the study of physiology and of clinical medicine. Undoubtedly almost every teacher of physiology and of physiological chemistry has realized the difficulties attendant upon an attempt to enable the student to carry to his practical work in medicine the fundamental facts with regard to the functioning of the organism that have been brought to his attention. At the time the student is acquiring his knowledge of physiology he is not able to appreciate its bearing upon the study and work in clinical medicine that is to follow. Later on, when he enters upon the study of the practice of medicine, or still later, when he is going about his daily work as a medical practitioner, he has lost the habit of thinking physiologically. The present volume makes the attempt—and a very excellent attempt it is—to bridge this gap. It presents clearly and concisely the essential facts of the physiology and chemistry of the human organism with their relation to medical practice. It has been said that the study of physiology is a circle that can be broken into at any point, but deeper thought will lead one to question this statement; it would seem rather that the natural gateways to a study of this subject are consideration of the alimentary system, or of the circulatory system by whose means nutriment is introduced into the organism and distributed to all its parts. Professor MacLeod elects to begin with the blood and its circulation and to follow this with a discussion of respiration, digestion, excretion of urine, metabolism, the endocrine organs and the central nervous system. In this way a complete conception is built up by logical sequence. There are, however, certain parts of the science, particularly the physiology of the special senses and of reproduction, for which applica-

tion in the general field of medicine and surgery is limited, and these parts have been omitted entirely. This somewhat arbitrary selection is justified by the fact that the ordinary text in physiology covers these subjects sufficiently, except for the specialist, for whom, on the other hand, no adequate review would have been possible within the limits of such a volume as this. Particular attention is paid to the far-reaching application of biochemical knowledge in the elucidation of many obscure problems of clinical medicine, such as those of diabetes, nephritis, acidosis, goitre and myxedæma. The arrangement of the bibliography is also worthy of commendation. The references contained in the text of each main division are grouped at the end of the section and in this way made readily available. Several chapters have been contributed by R. G. Pearce, those on the excretion of urine being particularly noteworthy. The book can not fail to be of value to the student of physiology, but makes an especial appeal to one who is engaged in the study and practice of medicine.

THE DISEASES OF INFANCY AND CHILDHOOD. Designed for the use of students and practitioners of medicine. By HENRY KOPLIK, M.D., attending pediatricist to the Mount Sinai Hospital. Fourth edition, revised and enlarged. 928 pages with 239 engravings. Price, \$6.00. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1918.

The well-known standing of the author and the fact that the work has reached a fourth edition compel a careful review of this book. It is intended for both student and practitioner. For the latter it is a splendid book and for the enthusiastic student who wishes to get to the bottom of the cases he sees in his daily clinics it is very welcome.

The problems of infant feeding are handled in a very conservative manner, so as to enable the general practitioner to steer a middle course between the various extremes advocated by most pediatricists.

The chapters on the infectious diseases are revised and brought up-to-date. In these chapters, as well as those on syphilis and tuberculosis, much that is controversial has been either omitted or only given the briefest mention.

The author is to be commended on his choice of illustrations. These have been mostly taken from his own cases. Instead of filling the book with pictures of so-called typical cases, but which

are so far advanced as to be seldom seen, he has attempted to show things of distinct value to the practitioner who has not had special training in a children's hospital.

THE WAR STORY OF THE C.A.M.C., 1914-1915. By COLONEL J. G. ADAMI, M.D., F.R.S., C.A.M.C. Published by Colons, Limited, and the Rolls House Publishing Co., Ltd., London, England, 1919.

The Canadian Army Medical Corps is indeed fortunate to have been able to secure Colonel Adami for this work. Undoubtedly he has a most facile pen which he has used to special advantage in sketching the work of the Corps to the fall of 1915. This book, although accurate in all its details, has been written in such an easy style that the author commands the attention and interest of the general public as well as the medical fraternity. To all of those who have assisted in the making of War Diaries during the War, Colonel Adami's success in creating such an interesting book from the dull mass of details which fill most of them, is indeed a marvel. He has evidently secured enough purple patches from interviews with the participants in the engagements to give the whole volume a warmth of colour that was not to be expected from the material placed at his disposal, and this elicits our warmest congratulations.

This work is really a history of the activities of the 1st Canadian Contingent from the time of its assembly at Valcartier in August, 1914, until it was joined by the 2nd Division in September, 1915. There is first a brief sketch of the evolution of the C.A.M.C. prior to the War. This part of the work is especially instructive to most Canadians. The Army Medical Corps was little known to the profession. The Militia was looked on as a hobby of some enthusiasts similar to the golf or curling club. The permanent Army Medical Corps was considered a morgue for doctors who had lost interest in the profession. Yet the excellent organizing work done by the Corps for several years before the War bore abundant fruit when hostilities began. The public is much indebted to Colonel Adami for bringing this information to its attention. So many of the Canadian doctors have since served with it, either in Canada or Overseas, that the history of its early troubles makes a distinct appeal.

The early trials at Valcartier, due to the lack of system, to be expected in such a rapid mobilization, are hastily run over. From

the medical view point, the principal difficulties were the documentation of such a large body of men and the sanitary arrangements of the new camp, which grew up almost over night. From here the reader is taken to view the mighty Armada that took them overseas. Their stay at Salisbury Plain and the meningitis epidemic is then dwelt on. Even Colonel Adami's pen fails before a description of the mud and privations put up with here.

Under the title "With the B. E. F. in France", the absorption of the 1st Division into the British Army is shown. Here the reader is given a clear insight into the method of the passing of the wounded soldier from the place where he falls until he reaches "Blighty", should his wound be serious enough to prevent his early return to duty.

Nearly a hundred pages are devoted to the second battle of Ypres. Here, Colonel Adami is seen at his best in making such an interesting narrative, by moulding the different accounts of dozens of the participants into a composite whole. With delightful ease he outlines the heroic work performed by the different medical officers, such as Scrimger and Hart, as well as the different ambulance units in these terrible days when, for the first time, soldiers had to endure the action of poisonous gases.

Short accounts of Festubert, Givenchy, and "Plugstreet" complete the history of the service rendered by the C.A.M.C. in the treatment of the soldiers at the front.

In the concluding pages short sketches of the hospital units of the First Contingent are given. Their work, while not as thrilling to read about as that of the units taking part in these engagements, nevertheless was equally necessary and showed an equal efficiency. These hospitals compare with all other units of the kind just as favourably as our Canadian Corps did, with all units of its kind fighting in France. We are looking forward to the next volume in which Colonel Adami has promised to give this portion of the work of the C.A.M.C. the attention which it deserves.

Books Received

THE following books have been received and the courtesy of the publishers in sending them is duly acknowledged. Reviews will be made from time to time of books selected from those which have been received.

ADVANCED SUGGESTION (Neuroinduction). By HAYDN BROWN, L.R.C.P., Fellow of the Royal Society of Medicine. 342 pages. Price, 7/6 net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, London, 1918.

PHYSICAL AND OCCUPATIONAL RE-EDUCATION OF THE MAIMED. By JEAN CAMUS, and others. Authorized translation by W. F. CASTLE, surgeon, R.N. With articles on British institutions by SIR ARTHUR PEARSON, Bart., and others. 195 pages. Price, 5/-net. Publishers: Baillière, Tindall & Cox, 8 Henrietta Street, London, 1918.

PRINCIPLES OF BACTERIOLOGY. By ARTHUR A. EISENBERG, A.B., M.D., director of laboratories, St. Vincent's Charity Hospital. 198 pages, illustrated. Price, \$1.75. Publishers: C. V. Mosby Company, 801 Metropolitan Building., St. Louis, 1918.

CLINICAL MEDICINE FOR NURSES. By PAUL H. RINGER, A.B., M.D., member of staff of the Asheville Mission Hospital, Asheville, N.C. 286 pages, illustrated. Price, \$2.00. Publishers: F. A. Davis Company, Philadelphia, 1918.

PHYSIOLOGY AND BIOCHEMISTRY IN MODERN MEDICINE. By J. J. R. MACLEOD, M.B., professor of physiology in the University of Toronto, Ontario, Canada; formerly professor of physiology in the Western Reserve University, Cleveland, Ohio. Assisted by ROY G. PEARCE, B.A., M.D., director of the Cardiorespiratory Laboratory of Lakeside Hospital, Cleveland, Ohio. 233 illustrations, including 11 plates in colours, 903 pages. Price, \$7.50. C. V. Mosby Co., St. Louis; McAinsh & Co., Limited, Toronto, 1918.

MENTAL DISEASES, A Handbook Dealing with Diagnosis and Classification. By WALTER VOSE GULICK, M.D., assistant superintendent Western State Hospital, Fort Steilacoom, Washington. Illustrated, 142 pages. Price, \$2.00. C. V. Mosby Co., St. Louis; McAinsh & Co., Limited, Toronto, 1918.

THE DISEASES OF INFANCY AND CHILDHOOD. Designed for the Use of Students and Practitioners of Medicine. By HENRY KOPLIK, M.D., attending pediatricist to the Mount Sinai Hospital. Fourth edition, revised and enlarged. 928 pages with 239 engravings. Price, \$6.00. Publishers: Lea & Febiger, 706 Sansom Street, Philadelphia, 1918.

EQUILIBRIUM AND VERTIGO. By ISAAC H. JONES, M.A., M.D., laryngologist, Philadelphia General Hospital, with an analysis of pathologic cases. By LEWIS FISHER, M.D., laryngologist and otologist, Mount Sinai Hospital, Philadelphia. 444 pages with 130 illustrations. Price, \$5.00. Publishers: J. B. Lippincott Company, Philadelphia, London, and Montreal, 1918.

UNITED STATES ARMY X-RAY MANUAL. Authorized by the Surgeon-General of the Army. Prepared under the direction of the Division of Roentgenology. 506 pages with 219 illustrations. Price, \$4.00. Publishers: Paul B. Hoeber, 67 East 59th Street, New York, 1918.

Medical Societies

CANADIAN PUBLIC HEALTH ASSOCIATION

THE eighth annual congress of the Canadian Public Health Association will be held in Toronto, on May 26th, 27th, and 28th, and will be a joint congress with the Ontario Health Officers' Association. Section meetings will be held in Child Welfare, Social Hygiene, Mental Hygiene, and Laboratory Work. It is planned to make this congress the largest public health convention, so far, held in Canada.

KINGSTON AND FRONTENAC MEDICAL AND
SURGICAL SOCIETY

THE regular monthly meeting of the Society was held at the Frontenac Club, February 10th, the president, Dr. Boyce, in the chair.

The Society has revived its pre-war custom of holding a banquet every other month before the reading of the paper. There were forty-one in attendance including several representatives from neighbouring towns.

The speaker of the evening, Dr. Bray of Ray Brook Sanatorium, N.Y., gave a most interesting paper or, rather a clinic on "The early diagnosis of pulmonary tuberculosis"—an old subject, but ever new in the hands of an expert. Dr. Bray emphasized the importance of a good history. No history is complete that does not include a history of the environment of the patient during early childhood. All too frequently it will be found that as a child the patient was in frequent or prolonged contact with an open case of tuberculosis. In only about 35 per cent. of the cases at Ray Brook is the family history negative. In discussing the symptoms, the speaker pointed out that instability of the nervous system and gastric disturbances were often found among the earliest manifestations of the disease, and too frequently not appraised at their full value. A persistent cough, even when the patient appeared to be in perfect health, should be the subject of a careful enquiry. Both cough and expectoration may be absent in the early stages of the disease. He emphasized the diagnostic value of localized moist râles at the points of predilection, and especially if these râles persisted after coughing.

He demonstrated his technique of bringing out these râles on a patient from the Mowat Sanatorium. It consisted of first, a full inspiration, then a full expiration, then a pause and lastly, a cough. If the râles described above were then audible, he would regard the case as one of tuberculosis.

After testing this auscultatory sign in a great number of patients, he had found it trustworthy in 90 per cent.

In discussing the laboratory tests, he advised repeated examination of the concentrated sputum. In 70 per cent. of the

early cases the tubercle bacilli were absent. Regarding the value of the deviation test, opinion was somewhat conflicting. He advised delaying judgement. He emphasized the importance of obtaining good *x-ray* plates in all doubtful cases, and showed a large number of very excellent ones.

Dr. Third in opening the discussion, agreed entirely with the importance of a good history. Next to a good history came a careful inspection. Are there depressions below the clavicles? Is there deficient expansion on one side? Does the chest expand evenly, or does one side lag behind the other? Does the area supplied from the third and fourth cervical segments, the collar and cape area, show atrophy?

A study of the visceromotor and viscerosensory reflexes he considered essential. He attached considerable value to the presence of the post-tussive râles. In all cases, however, there should be a careful collection of evidence from every available source, and when all the evidence is in, it should be carefully weighed by a judicial mind. In this way the possibility of error would be reduced to a minimum.

Dr. Sinclair, of Gananoque, said he was somewhat surprised to learn that the reading of *x-ray* plates was such an easy matter. A case that had recently come under his notice had given him an entirely erroneous idea. A surgeon had removed the stomach of a patient suffering from pyloric cancer. Several months later he sent the patient to a radiographer for a plate. The diagnosis came back "cancer of the stomach".

Dr. Hopkins, medical superintendent of the Mowat Sanatorium, who had been associated with Dr. Bray for some time at Ray Brook, added his quota of appreciation.

Dr. Quigley, who had been radiographer to No. 7 General (Queen's) in France and elsewhere for about three years, discussed the value of *x-ray* plates in diagnosis.

Dr. J. C. Connell (Eye, Ear, Nose and Throat) asked if ever tuberculosis was primary in the larynx. He had been led to ask this question from the fact that in a number of cases recently he had found definite lesions in the larynx when the physician referring the case had not been able to find any in the chest. Dr. Bray in replying, said in his opinion tuberculosis of the larynx was always secondary.

